PROJECT AUTHORIZATION

REGIONAL TRANSPORT AND STORAGE DEVELOPMENT, Phase II

(690-0209)

SEP 22 1981

ACTION MEMORANDUM FOR THE ASSISTANT ADMINISTRATOR FOR AFRICA

FROM: AAA/AFR/DR, John W. Koehring

SUBJECT: Project Authorization

Problem: Your signature is required for the attached Action Memorandum to the Administrator recommending a loan of $13,100,000 from the Section 531, Economic Support Fund (ESF) appropriation, to the Government of the Republic of Zambia (GRZ) for the Regional Transport and Storage Development Project - Phase II (690-0209). It is planned that $10,510,000 will be obligated in FY 1981.

Discussion: The purpose of the project is to facilitate the movement of food grains and commercial goods between Zambia and Zimbabwe by rehabilitating seriously deteriorated sections of the Chirundu-Kafue road, a key road transportation link between the two countries. The project will enhance economic development in Southern Africa through improvement in the transport and communication network in the region, a high priority activity to the regional strategy for solving the region's economic problems.

Approval of source/origin waivers to permit AID Geographic Code 935 (Special Free World) procurement of construction commodities (including vehicles) is requested in the amount of $500,000. The justification and waivers are included in Annex B of the Project Paper. The Initial Environmental Examination was reviewed and a negative determination recommended by the Africa Bureau Environmental Officer June 1, 1981 for Phase I of this project. Since Phase II consists of rehabilitating additional sections of the same road and entails no additional road construction, no further environmental analyses are deemed necessary by the Environmental Officer. The proposed project has been thoroughly reviewed by the appropriate committees and the analyses are found to be acceptable in all respects. On September 9, 1981, the ECPR recommended that the project be submitted to the Administrator for authorization.

Recommendation: That you sign the Action Memorandum to the Administrator recommending authorization of the project and the requested waivers and clear the Project Authorization (attached).

Attachments:

Action Memorandum for the Administrator
Project Authorization
Project Paper

Clearances:

DAA/AFR:WHNorth
AAA/AFR/DP:ICoker
AFR/DR:NCohen
AFR/DR/SA:WWolff
AFR/DR/ENGR:ATummarello
GC/AFR:TBork 9/15/81
AFR/SA:TMorse

AFR/DR/SA:BSpaid:rcj:9/14/81

SEP 2 2 1981

ACTION MEMORANDUM FOR THE ADMINISTRATOR

THRU: ES

THRU: AA/PPC, Larry Smucker (Acting)

FROM: AA/AFR, F. S. Ruddy

SUBJECT: Project Authorization - Regional Transport and Storage Development, Phase II (690-0209)

Peter FYI: approval of Phase II was conditioned upon GOZ agreement in writing to pay any overrun on Phase I. That was sent GOZ in bag before this Phase II was approved.

Problem: Your approval is required for a loan of $13,100,000 from the Section 531, Economic Support Fund (ESF) appropriation, to the Government of the Republic of Zambia (GRZ) for the Regional Transport and Storage Development Project - Phase II (690-0209). It is planned that $10,510,000 will be obligated in FY 1981.

Discussion: The Regional Transport and Storage Development Project represents an important component of AID's Southern Africa regional strategy to enhance economic development in Southern Africa. The project will facilitate the exchange of food and commodities between Zambia and Zimbabwe as well as among other countries both inside and outside the region, through the rehabilitation in Zambia of 52 kilometers of the Salisbury-Lusaka Road (commonly called and referred to hereafter as the Zim-Zam Road).

At present, several sections of the road are in a state of serious disrepair due to heavy traffic flows compounded by unusually heavy rains and a lack of maintenance. This project will finance the rehabilitation of 52 kilometers of the more seriously affected sections of the road. Of these 52 kilometers, 39 kilometers will be reconstructed and 13 kilometers will require pavement strengthening. This represents the second phase of a two phase project; Phase I focusses on the resealing of an additional 33 kilometers of road deemed to be the least deteriorated section of the road but vulnerable to the 1981-82 rains.

The Transport Commission of the Southern Africa Development Coordination Conference (SADCC) has assigned its highest transport priority to the rehabilitation of this road; both Zambia and Zimbabwe have similarly endorsed its priority. AID's regional development strategy for Southern Africa has identified transportation as one of the major impediments to economic growth and development within the region. The rehabilitation of the Zim-Zam Road will benefit: (1) urban and rural consumers in Zambia, the major clientele for maize and other foods and consumer goods produced in Zimbabwe which will be imported by Zambia for the foreseeable future; (2) farmer groups in Zimbabwe that produce maize for export; and (3) other present and future producers of export goods and commodities in Zimbabwe and Zambia.

In order to accomplish the purpose and outputs of Phase II, resources totalling $17,700,000 will be required. The proposed AID life-of-project contribution is a $13,100,000 loan of which $10,510,000 is requested for obligation in FY 1981. The GRZ will contribute the equivalent of $4,600,000. These funds will be disbursed over a three year period. In view of the economic situation in Zambia, the AID loan will be extended on AID's most concessional terms: repayment of the loan principal over a period of 40 years, with a ten year grace period. Interest of two percent per annum will be paid during the grace period and three percent per annum thereafter. The following table illustrates the inputs and functional areas in which funds will be required.

28594

Source and Application of AID Funding for Phase II

(U.S. $000;s)

Applications of Funds	AID For Ex.	AID L/Cur.	GRZ L/Cur.	LOP
1. Services				
a. Construction Contract	5,215	4,386	3,635	13,236
b. Consulting Engineer	690	657	—	1,347
c. Supervision, Soils Testing	—	—	175	175
2. Contingency Factor (20%)	1,176	976	790	2,942
TOTAL	7,081	6,019	4,600	17,700

The GRZ will contribute the equivalent of $4,600,000, or 26% of the total cost of Phase II. This contribution will finance the local currency costs of the construction contract, salaries of Ministry personnel, engineering, operating costs, administrative expenses and soil testing.

It has been concluded from the analyses in the Project Paper that:

(1) the project approach is technically and economically sound, socially acceptable and administratively feasible:

(2) the technical design and cost estimates are reasonable and adequately planned, thereby satisfying the requirements of Section 611(a) of the Foreign Assistance Act of 1961, as amended;

(3) the timing and funding of project activities are appropriately scheduled;

(4) sufficient planning has been done for the implementation, monitoring and evaluation of project progress; and

(5) all statutory criteria have been satisfied.

The Initial Environmental Examination was reviewed and a negative determination recommended by the Africa Bureau Environmental Officer June 1, 1981 for Phase I of this project. Since Phase II consists of rehabilitating additional sections of the same road and entails no new road construction, no further environmental analyses are deemed necessary by the Environmental Officer.

The loan agreement will include three major conditions which must be satisfied prior to the disbursement of funds:

(1) The GRZ will provide, in form and substance satisfactory to AID, evidence that the GRZ will finance all costs necessary to reseal and/or rehabilitate all sections of the road identified for resealing under Phase I which were not resealed under Phase I to a standard acceptable to AID and that such rehabilitation will be completed by December 31, 1982. It is realistic to expect that there will be additional costs involved with Phase I because implementation of that Phase has been delayed. Therefore, the

inclusion of this condition precedent is important to ensure that the GRZ recognizes, as their own responsibility, the coverage of these additional costs, which could range from $81,000 to $8 million, but probably will not exceed $2 million.

(2) The GRZ must provide AID with a plan describing the steps it plans to take to properly maintain the road after rehabilitation is completed as well as the schedule of resources (personnel, equipment and operating funds) to be made available for these purposes.

(3) The GRZ is to provide final plans and specifications, tender documents, cost estimates, time schedules and executed contracts for both construction and supervision services, as well as a plan describing when and in what fashion the GRZ contribution will be made.

Two covenants are included in the Project Agreement. The first requires the GRZ to carry out an appropriate maintenance program on the road after the contractor has completed the rehabilitation work. This will include the requirement that road maintenance be included as a budget item within the Ministry of Works and Supply's budget request to Parliament. The second covenant requires that the two trucks to be provided for maintenance work on the road be used exclusively for those purposes and also be adequately maintained.

Approval of a source/origin waiver for Code 935 procurement of equipment and materials is requested in the amount of $500,000. The justification for the waviers is included in Annex B of the Project Paper (Attachment B).

The project will be implemented through a host country contract with a Code 941 construction firm. The Roads Department of the Ministry of Works and Supply will have the prime implementation responsibility for the work to be done under this project. The GRZ's Road Department will be responsible for preparing the request for proposals, receiving and reviewing proposals, and making recommendations on the final selection of a contractor to the GRZ's Central Tender Board. The RLA/Mbabane will negotiate the Project Agreement, approve CPs and participate in IFB and RFP preparation and the establishment of payment arrangements. AAO/Zambia, with assistance from REDSO/EA will participate in the issuance of IFB/RFP documents and approval on the final selection of a contractor prior to a contract award by the Central Tender Board.

The Project Review was held on September 1, 1981 and the ECPR was held on September 9, 1981. There are no unresolved issues. A Congressional Notification advising Congress of a program change in the estimated total AID contribution to the project was forwarded on September 11, 1981; the waiting period will expire on September 26, 1981. The responsible AID officer in the field will be the AID representative, or his designee, and the AID/W backstop officer will be Dianne Blane, AFR/DR/SAP.

There are presently no significant human rights issues in Zambia.

Recommendation: That you sign the attached Project Authorization and thereby authorize Phase II of the project and the requested waviers, and the attached telegram.

Attachments:

a. Project Authorization
b. Project Paper

Clearances:

General Counsel: JBolton [illegible] Date 9-24-81
AAA/PPC/PDPR:JEriksson [illegible] Date 9-24-81

Clearances:

DAA/AFR:WHNorth _____ Date 9/24/81
GC/AFR:TBork _____ Date 9/18/81
GC/AFR:EDragon EAD Date 9/24/81
AAA/AFR/DR:ICoker _____ Date 9/21/81
AAA/AFR/DR:JWKoehring _____ Date 9-24-81
AFR/SA:TMorse _____ Date 9/17
AFR/DR/SA:WWolff _____ Date 9/16/81
AFR/DR/ENGR:ATummarello _____ Date 9/17/81
COM/ALI:PHagan (draft) _____ Date 9/21/81

DRAFTED BY:AFR/DR/SA:BSpaid:rcj:9/16/81

PID Submission Date: March 25, 1981
PID Approval Date: April 23, 1981
PP Submission Date: August 17, 1981
PP Final Review Meeting Date: September 9, 1981

UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON D.C. 20523

PROJECT AUTHORIZATION

Name of Country: Zambia

Name of Project: Southern Africa Regional Transport and Storage Development, Phase II

Number of Project: 690-0209

1. Pursuant to Section 531 of the Foreign Assistance Act of 1961, as amended, I hereby authorize the Southern Africa Regional Transport and Storage Development Project, Phase II, for Zambia ("Cooperating Country") involving planned obligations of not to exceed $13,100,000 in loan funds over a two year period from date of authorization, subject to the availability of funds in accordance with the A.I.D. OYB/allotment process, to help in financing foreign exchange and local currency costs for the project. This is in addition to the $900,000 authorized for obligation pursuant to Section 531 of the Foreign Assistance Act of 1961, as amended, for Phase I of this project.

2. The project consists of the reconstruction and strengthening of approximately 52 kilometers of the Kafue-Chirundu road in Zambia. A.I.D. will assist by financing the costs of consulting engineering and construction services, construction commodities and other related goods and services.

3. The Project Agreement which may be negotiated and executed by the officer to whom such authority is delegated in accordance with A.I.D. Regulations and Delegations of Authority shall be subject to the following essential terms and covenants and major conditions, together with such other terms and conditions as A.I.D. may deem appropriate.

a. Interest Rate and Terms of Repayment

The Cooperating Country shall repay the loan to A.I.D. in U.S. Dollars within forty (40) years from the date of first disbursement of the loan, including a grace period of not to exceed ten (10) years. The Cooperating Country shall pay to A.I.D. in U.S. Dollars interest from the date of first disbursement of the loan at the rate of (a) two percent (2%) per annum during the first ten (10) years, and (b) three percent (3%) per annum thereafter, on the outstanding disbursed balance of the loan and on any due and unpaid interest accrued thereon.

b. Source and Origin of Goods and Services

Goods and services financed by A.I.D. under the project shall have their source and origin in the Cooperating Country or in countries included in A.I.D. Geographic Code 941, except as A.I.D. may otherwide agree in writing.

c. Conditions Precedent

The Loan Agreement shall contain conditions precedent which provide, in substance, as follows:

Prior to disbursement under the Loan, or to issuance by A.I.D. of documentation pursuant to which disbursement will be made for the project, the Cooperating Country will, except as the Parties may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D.:

(1) Evidence that the GRZ will finance all costs necessary to reseal and/or rehabilitate all sections of the road identified for resealing under Phase I which are not resealed under Phase I to a standard acceptable to A.I.D. and that such resealing and/or rehabiliation will be completed by December 31, 1982.

(2) A plan for the maintenance to be performed on the Chirundu-Kafue road, including both routine and periodic maintenance, as well as a designation of the operating entity within the Cooperating Country that will be assigned responsibility for such maintenance and evidence of an intent to provide funds sufficient to maintain the road in the future.

(3) (a) Final plans, specifications, tender documents, cost estimates and time schedules for carrying out the activity;

(b) A detailed plan as to the timing and manner in which the Cooperating Country's contribution will be made available to the construction activity;

(c) A description of the arrangements made for providing construction services for such activity; including an executed contract for construction services with a firm acceptable to A.I.D.; and

(d) A description of the arrangements made for providing engineering supervisory services for such construction activity; including an executed contract with a firm satisfactory to A.I.D., unless such services are being provided by agencies of the Cooperating Country.

d. Covenants

The Loan Agreement will include Covenants which provide, in substance, as follows:

(1) The Cooperating Country covenants that upon completion and acceptance of each section of the road, it will establish and carry out a regular maintenance program for that section.

(2) The Cooperating Country covenants that it will provide, on a timely basis, a project manager for this project.

(3) The Cooperating Country covenants that the two trucks provided for maintenance will be used solely on the Kafue/Chirundu road and will be adequately maintained and utilized for the purpose of such maintenance.

e. Waivers

Notwithstanding paragraph 3b. above, and based upon the justification contained in Annex B, Exhibit 4, of the Project Paper, I hereby:

(1) Approve a source/origin waiver from AID Geographic Code 941 to AID Geographic Code 935 to permit procurement of (a) construction equipment and commodities (approximate value $383,000) and (b) 2 trucks and spare parts (approximate value $117,000);

(2) Find that special circumstances exist justifying a waiver of the requirements of Section 636(i) of the Act with respect to the above-described vehicles; and

(3) Certify that exclusion of procurement of the above-described commodities from Free World countries other than the Cooperating Country and countries included in Code 941 would seriously impede attainment of U.S. foreign policy objectives and objectives of the foreign assistance program.

Date: Sep 25, 1981

M. Peter McPherson
Administrator

Clearances:
GC:JBolton KCK for Date 9-24-81
AA/AFR:FSRuddy _____ Date 22 SEP 1981
A/AA/PPC:LSmucker _____ Date _____

Drafted: GC/AFR:TBorkamy:9/16/81:29218

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT DATA SHEET

1. TRANSACTION CODE: A (A = Add, C = Change, D = Delete) — Amendment Number: —

DOCUMENT CODE: 3

2. COUNTRY/ENTITY: Southern Africa Regional

3. PROJECT NUMBER: 690-0209

4. BUREAU/OFFICE: AFRICA / 06

5. PROJECT TITLE (maximum 40 characters): Regional Transport and Storage Phase II

6. PROJECT ASSISTANCE COMPLETION DATE (PACD): MM 12 DD — YY 84

7. ESTIMATED DATE OF OBLIGATION (Under "B." below, enter 1, 2, 3, or 4)
A. Initial FY 81 B. Quarter — C. Final FY 83

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

A. FUNDING SOURCE	FIRST FY B. FX	FIRST FY C. L/C	FIRST FY D. Total	LIFE OF PROJECT E. FX	LIFE OF PROJECT F. L/C	LIFE OF PROJECT G. Total
AID Appropriated Total	5,715	4,795	10,510	7,081	6,019	13,100
(Grant)	(–)	(–)	(–)	(–)	(–)	(–)
(Loan)	(5,715)	(4,795)	(10,510)	(7,081)	(6,019)	(13,100)
Other U.S. 1.						
Other U.S. 2.						
Host Country	–	1,375	1,375	–	4,600	4,600
Other Donor(s)						
TOTALS	5,715	6,170	11,885	7,081	10,619	17,700

9. SCHEDULE OF AID FUNDING ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE 1. Grant	C. PRIMARY TECH. CODE 2. Loan	D. OBLIGATIONS TO DATE 1. Grant	D. OBLIGATIONS TO DATE 2. Loan	E. AMOUNT APPROVED THIS ACTION 1. Grant	E. AMOUNT APPROVED THIS ACTION 2. Loan	F. LIFE OF PROJECT 1. Grant	F. LIFE OF PROJECT 2. Loan
(1) ES			821	990	–		13,100	990	13,100
(2)									
(3)									
(4)									
TOTALS				990			13,100	990	13,100

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

11. SECONDARY PURPOSE CODE

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

A. Code							
B. Amount							

13. PROJECT PURPOSE (maximum 480 characters)

To facilitate the exchange of food and industrial/commercial/consumer goods between Zambia and Zimbabwe and among other countries in the region by improving the Zim-Zam Road link.

14. SCHEDULED EVALUATIONS
Interim MM — YY — MM — YY — Final MM — YY

15. SOURCE/ORIGIN OF GOODS AND SERVICES
☐ 000 ☒ 941 ☐ Local ☒ Other (Specify) 935

16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a ____ page PP Amendment)

17. APPROVED BY
Signature: Carl Monse
Title:
Date Signed: MM 09 DD 13 YY 81

18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION
MM 08 DD 17 YY 81

AID 1330-4 (8-79)

INSTRUCTIONS

The approved Project Data Sheet summarizes basic data on the project and must provide reliable data for entry into the Country Program Data Bank (CPDB). As a general rule blocks 1 thru 16 are to be completed by the originating office or bureau. It is the responsibility of the reviewing bureau to assume that whenever the original Project Data Sheet is revised, the Project Data Sheet conforms to the revision.

Block 1 -Enter the appropriate letter code in the box, if a change, indicate the Amendment Number.

Block 2 - Enter the name of the Country, Regional or other Entity.

Block 3-Enter the Project Number assigned by the field mission or an AID/W bureau.

Block 4 - Enter the sponsoring Bureau/Office Symbol and Code. *(See Handbook 3, Appendix 5A, Table 1, Page 1 for guidance.)*

Block 5 - Enter the Project Title *(stay within brackets; limit to 40 characters).*

Block 6 - Enter the Estimated Project Assistance Completion Date. *(See AIDTO Circular A-24 dated 1/26/78, paragraph C, Page 2.)*

Block 7A. - Enter the FY for the first obligation of AID funds for the project.
Block 7B. - Enter the quarter of FY for the first AID funds obligation.
Block 7C. - Enter the FY for the last AID funds obligations.

Block 8 - Enter the amounts from the 'Summary Cost Estimates' and 'Financial Table' of the Project Data Sheet.
NOTE: The L/C column must show the estimated U.S. dollars to be used for the financing of local costs by AID on the lines corresponding to AID.

Block 9 - Enter the amounts and details from the Project Data Sheet section reflecting the estimated rate of use of AID funds.
Block 9A. - Use the Alpha Code. *(See Handbook 3, Appendix 5A, Table 2, Page 2 for guidance.)*

Blocks 9B., C1. & C2. - See Handbook 3, Appendix 5B for guidance. The total of columns 1 and 2 of F must equal the AID appropriated funds total of 8G.

Blocks 10 and 11 - See Handbook 3, Appendix 5B for guidance.

Block 12 - Enter the codes and amounts attributable to each concern for Life of Project. *(See Handbook 3, Appendix 5B, Attachment C for coding.)*

Block 13 - Enter the Project Purpose as it appears in the approved PID Facesheet, or as modified during the project development and reflected in the Project Data Sheet.

Block 14 - Enter the evaluation(s) scheduled in this section.

Block 15 - Enter the information related to the procurement taken from the appropriate section of the Project Data Sheet.

Block 16 - This block is to be used with requests for the amendment of a project.

Block 17 - This block is to be signed and dated by the Authorizing Official of the originating office. The Project Data Sheet will not be reviewed if this Data Sheet is not signed and dated. Do not initial.

Block 18 - This date is to be provided by the office or bureau responsible for the processing of the document covered by this Data Sheet.

REGIONAL TRANSPORT AND STORAGE--PHASE II (ZIM-ZAM ROAD)

TABLE OF CONTENTS

PROJECT PAPER ANNEXES

D. Engineering Annex

Exhibit 1 - Hewett Report
Exhibit 2 - Repair Procedures
Exhibit 3 - Roads Department Organization Chart
Exhibit 4 - Project Site - Physical Characteristics
Exhibit 5 - Map

E. Economic Annex

F. PID Approval Message

ACRONYMS

AAO/Zam. - AID Affairs Officer/Zambia
AFR/DR/SAP - Africa Bureau/Office of Development Resources/Southern Africa Projects
AFR/SA - Africa Bureau/Office of Southern Africa Affairs
AID - Agency for International Development
AID/W - Agency for International Development/Washington
B/C - Benefit/Cost
CBD - Commerce Business Daily
CDSS - Country Development Strategy Statement
CP - Condition Precedent
CTB - Central Tender Board
EAAC - East Africa Accounting Center (Nairobi)
ESF - Economic Support Funds
FHWA - Federal Highway Administration (U.S.)
GRZ - Government of the Republic of Zambia
IBRD - International Bank for Reconstruction and Development
IFB - Invitation for Bids
IRR - Internal Rate of Return
K - Kwacha
KM - Kilometer
NRZ - National Railway of Zimbabwe
OPEY - Operational Experts
OYB - Operational Year Budget
PID - Project Identification Document
PP - Project Paper
REDSO/EA-Regional Economic Development Services Office/East Africa (Nairobi,Kenya)
RFP - Request for Proposals
RLA - Regional Legal Advisor (Mbabane, Swaziland)
RSA - Republic of South Africa
SADCC - Southern Africa Development Coordination Conferences
SAICC - Southern Africa Development Transportation Coordination Committee
TAZARA - Tanzania - Zambia Railroad
UDI - Unilateral Declaration of Independance
Zim-Zam - Salisbury - Lusaka Road

EQUIVALENCES:

K 1.00 = U.S. $1.15
U.S. $1.00 = K.87
1 Kilometer = .621 mile

I. Project Summary and Recommendations

A. Face Sheet

B. Recommendation

That AID/W approval be given to a loan to the Government of the Republic of Zambia (GRZ) in the amount of $13.1 million from ESF sources for the purpose of rehabilitating selected sections of the Salisbury-Lusaka (Zim-Zam) Road. The proposed loan terms are a maturity period of 40 years, with 10 years grace, at an interest rate of 2% during the grace period and 3% thereafter. The GRZ has agreed to contribute the equivalent of $4.6 million in support of the activity.

C. Summary Project Description

1. Borrower

The Borrower will be the GRZ; the Roads Department of the Ministry of Works and Supply will serve as the Project's principal executing entity.

2. Summary Project Description

The proposed Project is one of several responses to the U.S. objective of supporting pragmatic solutions to regional economic problems in Southern Africa. It entails the rehabilitation of 52 kilometers of the Salisbury-Lusaka (Zim-Zam) Road within Zambia. The Transport Committee of the Southern Africa Development Coordination Conferences (SADCC) has assigned its highest transport priority to rehabilitating this road; both Zambia and Zimbabwe have similarly endorsed its priority.

As a landlocked country Zambia is extremely concerned about its access to external trade. Over the past decade there have been three major changes in its principal access route to the sea--first, the southern route (South Africa and Mozambique), then a shift to Angola, then Tanzania, and now again the southern route. The situation here has no parallel in Africa. Consequently, the GRZ attaches great importance to rehabilitating this road link with Zimbabwe. Not only is it the shortest route to any major port (which is Beira in Mozambique), it also connects the population centers of Lusaka and the Copperbelt with a major maize producing area in northern Zimbabwe as well as the Salisbury market and the railhead at Zawi (Lion's Den). The exchanges of food and industrial/commercial/consumer goods along this route have been critical the past 15 months, especially in view of the drought in Zambia in 1980 and its ripple effect in 1981. Approximately 60,000 tons of maize was transported over the road since its reopening early in 1980.

Before that, the Zim-Zam Road was closed to traffic for almost seven years (1973-80) due to the war in Rhodesia. No maintenance was performed during that time. However, once traffic resumed, particularly heavy truck movements, the road began to break up in several places. Delays are common and blockages have twice stopped truck traffic entirely for several days during the past rainy season. The combination of three factors -- heavy traffic flows compounded by unusually heavy rains and a lack of maintenance -- has left several sections of the Chirundu-Kafue link in a state of distress.

The U.S. was approached to assist in financing the repair work. An AID team developed a PID in February 1981, which recommended rehabilitation of road sections in both Zimbabwe and Zambia. A decision on how best to finance the work in Zimbabwe is expected shortly. In Zambia, the project was broken into two phases -- an emergency phase that will prevent the better sections of road from further deterioration (potentially saving up to seven million dollars in future repairs), and a follow-on rehabilitation phase, which is the subject of this Project Paper. Phase I was an emergency $990,000 grant to Zambia to finance the resealing and protection of 33 Km of the best preserved road sections. The grant was authorized and the Project Agreement signed in early June 1981. AID/Zambia is about to enter into contract negotiations with a construction firm to carry out the resealing operation, hopefully before the onset of the rains in late November/December. Those sections not completed by that time will be completed after the rainy season in 1982, with the GRZ assuming additional costs above the $990,000 AID grant.

Phase II will finance the rehabilitation of 52 kilometers of the more seriously affected sections of road. The total cost of this work is expected to be $17.7 million, of which AID will lend $13.1 million and the GRZ will provide the $4.6 million balance. These funds will be disbursed over a three year period. The funds will finance the services of (1) a consultant engineering firm to supervise construction and (2) a construction contractor to carry out the reconstruction and resealing tasks. Both services will be procured under host country contracting arrangements. Of the 52 km of road to be rehabilitated, 39 km will be reconstructed and 13 km will require pavement strengthening. The work is expected to be completed principally during the dry seasons in 1982 and 1983. No other donor has been approached to finance this project.

3. Summary Findings

The Project Paper design team has determined that the proposed activity is technically and financially feasible for completion within the amounts of financing requested and within the proposed three year loan disbursement period. The GRZ implementing entity (the Ministry of Works and Supply/Roads Department) has been thoroughly examined and is believed to have the capacity to support the project. No significant

technical or social issues have been identified. A potential issue with respect to post-project maintenance has been raised and the PP team has proposed certain responses involving one condition precedent and one covenant for inclusion in the Project Agreement which AID/W is being asked to endorse. Waiver requests for the procurement of commodities from Code 935 countries (probably the Republic of South Africa) are requested in the amount of $500,000. The justification and waiver(s) are included in Annex B.

On the basis of the analysis contained in this document, AAO/Zambia and REDSO/EA have concluded that the Project is technically, economically and financially sound and recommends that a loan to the GRZ be authorized in the amount of $13,100,000.

4. Project Design Team

The PP design team included the following members:

Laurence Hausman	Team leader/design officer (REDSO/EA)
Donald Reilly	Senior engineer (REDSO/EA)
Philip Moeller	Transport economist (AID/W contractor)
Anne Williams	Legal Advisor (RLA/Swaziland)
Timm Harris	Financial Analyst (REDSO/EA)

Reviewed and approved by John Patterson (AAO/Zambia)
Alexander Love (Director, REDSO/EA)

II. Background Discussion

A. Southern Africa Development Strategy (Transportation)

In the current political context the transport system in Southern Africa poses a major constraint to regional economic development. This context is one in which the eight black-ruled countries of the region would prefer not to have any economic or political dealings with the one nation (the Republic of South Africa) upon which, to a greater or lesser extent, they are all economically dependent. This dependency is evident in many sectors, especially so in transportation and trade. The currently viable options open for the movement of goods and people from the six landlocked countries (Zambia, Zimbabwe, Malawi, Botswana, Lesotho, Swaziland) into and out of the region are limited. In all cases some and in most cases the bulk of their trade must be handled through South African ports on South African rail cars. These problems are geographical and can be traced back to the historical development pattern of the region:

-- Structurally and functionally the transport system evolved to serve commercial interests in the colonial period, especially the exploitation of minerals; most routes ran north to south and linked with ports in the Republic of South Africa (RSA);

-- Territorial demarcation resulted in the creation of six landlocked states which are dependent upon transit through one or more of their neighbors to obtain access to the sea;

-- Various political factors and considerations have been imposed upon the operation of the transport system, including the closure of borders and embargoes on cargo origins and destination.

Recognizing these facts, the Southern Africa states are anxious and determined to expand their options for access and egress.

The serious nature of this concern and the recognition that these problems can only be effectively tackled regionally, have been evident for some years. However, it was only after the advent of majority rule in Zimbabwe that this regional concept could take a more concrete form. Recently, the leaders of the eight Southern African states (plus Tanzania) have taken initiatives to cooperate in solving their most urgent economic problems on a regional basis. They created an umbrella organization, the Southern Africa Development Coordination Conferences (SADCC), which has been convened three times at the heads-of-state level, in 1979, 1980 and 1981, with the objective of increasing regional economic cooperation. At the April 1980 meeting in Lusaka, seven states were authorized to take the lead in coordinating activities in specific economic sectors. Actions are now being

taken in two priority areas -- transportation and communications (Mozambique) and food security (Zimbabwe).

Following preparatory technical meetings, the SADCC held a meeting in Maputo in November 1980, attended by international donor representatives. At this meeting, donor assistance was requested in the two priority sectors of transport and food security. Under SADCC auspices a Southern Africa Transportation Coordination Commission (SATCC) has been established in Mozambique with Scandinavian assistance to coordinate all regional transport matters. The Commission's technical committee has prepared a report listing priority regional activities for which donor assistance is being requested. This report also reflects certain policy decisions regarding priorities in the area of road transport, including a decision to rehabilitate existing roads before undertaking new construction so as to obtain the greatest benefit at the least cost in the shortest time frame. In both the SATCC consultants' report and the transport workshops, rehabilitation of the Zim-Zam Road -- a major road link between Salisbury and Lusaka -- has been assigned the highest regional priority by the SATCC, Zambia and Zimbabwe. As an outgrowth of the Maputo meeting, the U.S. received a request to support this regional project.

B. U.S. Regional Support Strategy

The proposal to rehabilitate key sections of the Salisbury-Lusaka (Zim-Zam) Road is a direct outgrowth of United States interests and objectives in Southern Africa.

Southern Africa, a region rich in minerals and beset by conflict and political turmoil, has become increasingly important to the United States. The eight black, majority-ruled states are in the process of coming to terms with their national and regional aspirations and the need to redefine their relationships with the Republic of South Africa, with each other and with countries outside of the region. It is essential to regional stability and U.S. influence that we support pragmatic change in these evolving relationships. This is critical to protecting the $2.4 billion of investments the U.S. has in the region and ensuring continued western access to significant amounts of the world's minerals. We are seeking to promote this development on a peaceful basis, yet the political transition from colonial to majority rule has left a legacy of disruption which constrains this.

At the same time, another important U.S. objective is to help meet the basic human needs of the 40 million people in the region for healthier lives, better educational opportunities and adequate supplies of food. In 1980, with the exception of South Africa, none of the countries in the region were self-sufficient in basic foods. The U.S. responded by making available substantial amounts of food aid. In 1981, Zimbabwe regained self-sufficiency, resumed its key role as an exporter of maize and has been selling maize to several countries in the region, including Zambia. In the latter instance, the bulk of the maize was shipped via the Salisbury-Lusaka (Zim-Zam) road.

It has become increasingly evident that effective pursuit of these political and economic objectives are particularly inhibited by all aspects of

transport infrastructure, from internal farm-to-market roads to international road and rail routes and port facilities serving the six landlocked countries of the region.

The U.S. strategy in Southern Africa is to address these problems on a bilateral basis where the solution is primarily within a given country; where the the problem has its cause or effect beyond a single country, it is U.S. strategy to address the problem regionally. The proposed Zim-Zam Road rehabilitation, which would facilitate access of commercial cargo and vital grain movements from surplus Zimbabwe to deficit Zambia, is derived from the regional strategy. Aiding its rehabilitation will directly contribute to our political objective of assuring SADCC members of U.S. support for their cooperative efforts to solve the region's economic problems.

1. Project Relationship to AID Regional Strategy

The proposed project is fully consistent with the AID Southern Africa Regional Program Strategy and Annual Budget Submission (FY 83), both in general and specific terms. As indicated in that document,

> ".... improvement of the transport and communication network in Southern Africa is the highest stated priority for regional cooperative efforts ..... The landlocked countries of the region need improved transport to the sea to move minerals to western markets and to import food and essential industrial goods for their development. They need improved transport to increase trade among themselves...Without major rehabilitation and upgrading, the existing system simply is inadequate for today's (much less tomorrow's) needs...." (p.10)

More specifically, the Zim-Zam Road "represents a key road link identified in the SATCC list of priorities. It provides linkage between ....Zimbabwe and Zambia and to the railhead at Zawi leading to the port of Beira in Mozambique" (p.23).

The proposal at hand will rehabilitate an existing system rather than construct an additional or alternate route. It is, therefore, in full accord with SADCC/SATCC guidelines. Furthermore, by facilitating the shipment of grain between Zimbabwe and Zambia it will also respond to the SADCC objective of addressing regional food security concerns.

C. Regional Transport - The Zambian Perspective

The impact of regional transport problems on the Zambian economy has been particularly harsh. In the early 1970's, Zambia relied upon rail transport through Rhodesia for the majority of its import/export traffic to reach the ports of the RSA and Mozambique. The decision of the Front Line states to close the border with Rhodesia in 1974 in protest over UDI was crucial for Zambia. Although this action cut Zambia's links to the south and east, it was acceptable because the option of rail transport through Zaire to

the port of Lobito in Angola via the Benguela Railway was still open. However, increasing security problems in Angola soon stopped all traffic on the Benguela and, until the opening of the Tazara (Tanzania-Zambia Railroad) link with Dar es Salaam, Zambia was virtually cut off from direct rail service. Tazara, moreover, has been plagued with operational problems and proved unable to handle even half its projected cargo capacity. The inability to ship out exports of copper contributed to a shortage of foreign exchange which significantly restricted the flow of such imports as fuel, lubricants and spare parts. This, in turn, limited the GRZ's transport maintenance capability. A decision to reopen partially the rail link with Rhodesia through Livingstone in 1979, largely to permit limited movement of copper exports, relieved some of the worst pressures on the economy.

There was, therefore, great expectation in Lusaka was that once the independence issue was settled in Zimbabwe, transport links would be reopened and normal commodity flows, especially by rail, would resume. This has only partly taken place because:

-- The deteriorated condition of rail and port infrastructure in Mozambique limits the flows of commodities through Mozambique and will require massive and long-term investment to rehabilitate them;

-- Congestion has developed on the railway system and at some of the major ports in the RSA;

-- Serious congestion has developed on the National Railway of Zimbabwe (NRZ);

-- Shortages of locomotives and rail wagons have occurred in Zimbabwe which will only be relieved over time;

-- Problems continue to restrict the use of the Tazara and Benguela lines; and

-- Zambia continues to be faced by shortages of foreign exchange.

The situation in Zambia has been further complicated by problems in the agricultural sector, particularly the drought in 1980 and its ripple effect in 1981. To make up the domestic shortfalls in maize production, Zambia procured over 60,000 tons of maize from Zimbabwe. The bulk of this grain was moved in by truck from Zawi (Lion's Den) in Zimbabwe to Lusaka via the newly reopened Salisbury-Lusaka (Zim-Zam) road. The maize from Zimbabwe made up a crucial part of Zambia's food imports. Furthermore, it is likely that Zimbabwe will be a source of additional grain until such time as Zambia is self-sufficient in maize. In the interim, the value of the Zim-Zam route is clear. Furthermore, the Zim-Zam Road is not only used for imports of maize but also plays an important role in the shipments of steel, bitumen, machinery--especially important for mining activity in Zambia and Zaire--and

spare parts. Various consumer goods, including perishable foods, are also moving over this route.

The route plays a dual role in providing both direct linkage by truck and road/rail linkage with the rail head at Zawi. Such linkages will be especially significant for Zambia once rehabilitation of the rail and port facilities of Mozambique takes place and/or in the case of a cessation of traffic from the RSA.

The only other major route options open to Zambia for moving products to and from the south and east are through Livingstone-Victoria Falls to Zimbabwe (rail and road) or via Chipata to Malawi (road). Both of these other road routes are significantly longer, are in need of some repairs, are more expensive to utilize than the Salisbury-Lusaka (Zim-Zam) road and are already carrying high volumes of traffic. Furthermore, the deteriorated state of the Livingstone Road--equivalent in places to only a single paved lane--would limit its ability to handle the added traffic that now flows via Chirundu. Although there is no reference to this road in Zambia's Third National Development Plan, this is because the road had not yet been reopened to traffic at the time the report was prepared. Since then, there have been frequent expressions of concern over the state of the road by senior Zambian officials. These concerns became more pronounced once maize trucks began making extensive use of the road. For these several reasons Zambia has assigned its highest regional road transport priority to the rehabilitation of this route.

D. Relationship to Country Program - The View From AID/Zambia

As was set out in the FY 82 Zambia CDSS and the FY 83 Supplement, U.S. assistance to Zambia is focused totally on increasing food production and raising small farmer income. All current and proposed AID/Zambia projects are aimed at these goals: the two Commodity Import Programs in FY 80 and FY 81 have directed both procurement and local currency attributions toward these goals; the PL-480 self-help measures and currency generations have followed this pattern as well; and, the resources of both the Zambia Agriculture Training, Planning and Institutional Development (ZATPID) project and the Agricultural Research and Extension project focus directly on various practical problem areas that must be dealt with to achieve these goals. Also, all projected AID activities in the future will be oriented to increasing food production and small farmer income.

The proposed regional project, while responding to a set of concerns that is broader than the agriculture sector, is nonetheless aimed at achieving similar although not identical objectives. Until such time as Zambia is self-sufficient in basic grains it will likely be an importer of Zimbabwean maize, or at least will utilize the Zimbabwean transport link for access to ports in Mozambique and the RSA. As the route used to import the bulk of Zimbabwean maize this year, the Zim-Zam Road is the shortest and least expensive routing from Zimbabwe's grain producing areas to the urban centers of Lusaka and the Copperbelt. This is true despite the sections of road in need of rehabilitation. To minimize future costs and delays it is critical

that the road be brought back to a fully serviceable condition as soon as possible and maintained in that manner. If those objectives can be achieved the benefits to Zambia's population, including its farmers, of lower transport costs for imported food, machinery, spare parts and fertilizers could be passed along to all sectors of the economy. Therefore, although indirect, the anticipated benefits of this project will have a positive effect on the Mission's target group, and in this manner will complement the Mission's strategy.

E. ZIM-ZAM ROAD (Zimbabwe) - AID's Response

As identified in the PID, there are approximately 12 kilometers of road between the border bridge at Chirundu and the escarpment below Makuti in Zimbabwe which are in need of reconstruction because of sub-grade and pavement failures. These failures have resulted from the use of sodic soils (which become excessively plastic when exposed to moisture) as material for fill sections during construction.

It was originally intended to combine the activities in Zambia and Zimbabwe into a single project. However, results of the soils analysis which were to have confirmed the extent of the problem areas in Zimbabwe were not available when anticipated and design work was delayed. Therefore, the activities in both countries are proceeding independently.

The design team and USAID/Zimbabwe have both discussed this activity with GOZ officials and confirmed that AID is still planning to finance the reconstruction of the defective road sections. However, a final decision on the most appropriate mechanism to fund this work has not yet been taken. The two most likely alternatives are (1) a separate project to be developed in October-November of this year, or (2) the inclusion of the reconstruction work on this road in the list of activities to be financed with local currency generations under the proposed FY 1982 Commodity Import Program. A decision on which mechanism to use will be made soon after the new USAID Director to Zimbabwe arrives at post. Work on the affected sections should be initiated and completed during the 1982 dry season.

III. PROJECT DESCRIPTION

A. Project Goal and Purpose

The goal of the project is to enhance the economic development and improve the relative welfare of the general population in both Zambia and Zimbabwe. Trade and transport are necessary conditions of development and the project will enhance those conditions. The project purpose is to facilitate the exchange of food and commercial/consumer goods between the two nations and with other countries both inside and outside the region. Achieving these objectives implies assured, year-round access to this route, an important exchange link between both countries. This will permit trucks with cargoes of food and commercial/industrial/consumer goods to use the most direct route linking the Zambian population concentrations in the Copperbelt and Lusaka with (1) the railhead at Zawi (for access to Mozambique ports), (2) one of Zimbabwe's major maize producing areas and (3) the Salisbury market. See Annex C for Logical Framework and a discussion of achievement indicators and assumptions.

Achievement of both the project goal and purpose will contribute to the general U.S. objective of supporting pragmatic solutions to regional economic problems encountered by SADCC-member nations.

B. Project Components

The proposed project will finance the services and materials necessary to carry out the second phase of rehabilitating the Kafue/Chirundu portion of the Salisbury-Lusaka (Zim-Zam) Road. This second phase activity will be coordinated with the recently signed AID U.S. $990,000 Grant (690-0209) to resurface approximately 33 Kms of the road.

1. Phase I

The Zim-Zam Road PID, in addition to identifying those sections of the Salisbury-Lusaka Road in need of rehabilitation, proposed an option which entailed immediate resealing of 34 Kms of the best portions of the Kafue/Chirundu Road link. This would protect those sections from further deterioration and, more importantly, would eliminate the need for more costly resurfacing or reconstructing at a later point in the project. Potential savings under this option were estimated at as much as U.S. $7 million.

AID/W agreed with the proposal, moved very quickly to prepare a Project Paper and in June 1981, authorized an ESF Grant for U.S. $990,000 to finance Phase I of the Zim-Zam Road project -- resealing 33 Kms of road between the Kafue River Bridge and the Chirundu Border Post. This work is to be completed before the onset of the 1981 rainy season in late November/December. Any work not finished by that time will be completed after the rainy season in 1982, with the GRZ assuming additional costs over and above the U.S.$990,000 AID grant contribution. A condition precedent to disbursement is proposed to confirm this potential GRZ obligation.

The Project Agreement was signed on June 5, 1981; since then tender documents have been issued, a contractor site visit was arranged and bids were received on July 24, 1981. A contractor for the work has tentatively been selected and the contract is anticipated to be let in September. The Roads Department will supervise the contractor, with monitoring by REDSO/EA engineers and, possibly, a short-term (PSC) engineering consultant.

2. Phase II - Discussion

As a result of the war in Rhodesia, the Chirundu to Kafue section of the Salisbury-Lusaka (Zim-Zam) Road was closed to thru-traffic for approximately seven years, 1973 through early 1980. Ironically, the seven year absence of traffic and maintenance contributed to the deterioration of the road surface by making it excessively brittle. In addition, the pavement had not been sealed for a number of years prior to the closing of the road, which resulted in a surface that began cracking readily once heavy vehicular traffic resumed in 1980.

Since its reopening, the Zim-Zam Road has become a very important route for the movement of grain, fertilizer, mining equipment, spare parts and general cargo into Zambia, particularly during the periods of grain shortage in 1980 and early 1981. The alternate road/rail route by way of Victoria Falls, particularly for Zimbabwean maize and other commodities, is twice as long and more costly. As a result of these various factors -- heavy rains (particularly in early 1981), substantial traffic flows and inadequate maintenance -- the road is now suffering fairly rapid deterioration.

The Roads Department of the Ministry of Works and Supply undertook an inventory of the road in February 1981, prior to the arrival of the PID team. The road was found to require considerably more rehabilitation than estimated at the SATCC meeting in Maputo in November 1980. Those findings served as the basis for the rehabilitation estimates presented in the PID.

Since that time the status of the road has been regularly checked to determine how rapidly deterioration is taking place. Roads Department personnel, an engineer from the U.S. Federal Highway Administration under contract to AID and members of the PP team have all inspected the road in the past two months. These recent observations form the basis for the PP team's determination of the extent of the rehabilitation required. This consensus is 13 Kms of pavement strengthening and 39 Kms of complete reconstruction. Several conservative assumptions have been made regarding these figures to provide assurance that the project will be adequately funded. These include the following: (1) that 10 percent of the 33 Km of resealing scheduled under Phase I will further deteriorate and require Phase II strengthening; (2) that there will be a further decrease in the road surface to be strengthened (13 Kms in the current projection versus 17 Kms in the PID estimate); and, (3) a concurrent increase in the surface requiring complete reconstruction (39 Kms in the current projection versus 37 Kms in the PID estimate). See the Engineering Analysis for additional discussion (Section IV.A).

3. Phase II - Inputs

The Phase II components include services for engineering supervision and construction plus a limited quantity of laboratory equipment and two maintenance vehicles to be provided by the construction contractor. The total cost is $17.7 million, to which AID will contribute $13.1 million and the GRZ the local currency equivalent of $4.6 million. The basis for arriving at these costs is recently negotiated contracts for similar types of work to which an annual 20 percent inflation factor and a 20 percent contingency factor have been added (see Financial Analysis).

a) The project will provide for both engineering supervision ($1.35 million) and construction services ($13.24 million) in addition to those support activities which the Roads Department will undertake ($175,000). As it is presently structured, the Ministry of Works and Supply/Roads Department has neither the funds nor the personnel nor is it structured to undertake the rehabilitation work required by this project. However, the Minister of Works and Supply has requested that the Roads Department assist the project wherever possible. Therefore, the Roads Department will carry out soils collection and analysis, road design and regular site inspections. They will require the additional outside support services of a consulting engineering firm to provide general supervision of construction. The need for this service was independently confirmed by the FHWA engineer (see Annex D) and the PP design team engineer.

The construction capacity of the Ministry is also extremely limited. Projects of a similar nature are invariably contracted out to private firms. Therefore, construction contractor services will also be funded under the project. Based upon previous AID experience in Southern Africa (the Southern Perimeter Road in Lesotho and the first phase of this project) it is reasonably certain that U.S. or Code 941 firms in Zimbabwe, Kenya, Malawi and the host country will be interested in sufficient (and competitive) numbers to undertake work of this type and size. Therefore, no Code 935 waivers for services are anticipated at this time.

b) Given the general concerns about road maintenance in the country (see discussion in the Engineering Analysis, IV.A.3) and the specific concerns about future maintenance of this road, the design team proposed the inclusion of several pieces of maintenance equipment in the project. However, although the Roads Department agreed with the inclusion of two 3 cubic meter tipper trucks, they also stated that between the Maintenance Branch's existing equipment and the equipment inputs to be provided by the World Bank maintenance project no additional support was necessary. The shortages that exist relate more to operating funds than to equipment, and a condition of the World Bank loan is a net increase in the Ministry's budget for operating expenses. Notwithstanding these factors and also to provide AID with assurances that adequate maintenance will be carried out on this road, the Project Agreement contains a condition precedent to disbursement that the

GRZ provide us with a detailed maintenance plan, indicating the schedule of maintenance tasks to be followed and the budget to be applied to carry out those tasks. A covenant is also proposed, whereby the GRZ will agree to maintain the road in a manner acceptable to AID.

Meanwhile, the project will ensure that the contractor supplies the Roads Department with two small tipper trucks for use in maintenance work after the first construction season. The trucks will be assigned to the Roads Department work camp located along the road to transport work crews and materials specifically for this project.

c) During his short-term assignment, the contract FHWA engineer recommended providing additional laboratory equipment and supplies to the Road Department's soils laboratory. Although the laboratory is functioning and has adequate equipment to handle Phase I requirements, it will require additional equipment and supplies to carry out the soils and pavement tests necessary under the second phase. Under the terms of the construction contract, the contractor will be providing these commodities (valued at $60,000, including air shipment) to the Roads Department. The items are readily available in the U.S. and will be procured during the contractor mobilization phase to arrive as construction commences.

C. Project Beneficiaries

There are two principal categories of beneficiaries that will be affected by this project: first, the direct beneficiaries who are dependent upon the access the road provides as well as those who will benefit during the rehabilitation/construction phase and thereafter and, second, those who will indirectly benefit from the improvement in this transport link between Zambia and Zimbabwe.

As regards the first category (direct beneficiaries) the population living in the area serviced by the road, with its rugged terrain and limited amounts of flat, arable land, has never settled here in significant numbers. Furthermore, the war in Rhodesia resulted in a dislocation of most of that population, and their return has been gradual. Nonetheless, there are several concentrations of population just off the main route, such as the settlement near the Kafue Power Station and at Maile near the ferry crossing. Regular traffic over this route is essential to maintaining the living standard of the local population. The route provides two-way access to such social services as education (several primary schools) and health (in addition to several rural health clinics there is a major church mission medical facility for the area located in Maile) and is a major link with the administrative centers of the Central and Southern Provinces which respectively oversee the areas to the north and south of the road.

Another group that will directly benefit during the rehabilitation effort is the estimated 300 unskilled and semi-skilled road construction workers to be employed on the site. The project will offer short-term (two year) employment opportunities to families in the area and

generate as much as K. 400-500,000 in wages. In addition, there will be ancillary benefits from services and sales to the labor crews.

Over the longer term there will be a requirement for 35-40 road maintenance workers at the Roads Department work camp along the route. Furthermore, there are several service facilities (petrol stations, mechanic shops, etc.) that are almost wholly dependent upon the road being open on a regular basis. Lastly, there are small groups of emergent (semi-commercial) farmers along the road between Kafue and the Kafue Gorge turn-off that produce vegetables and beef for the Lusaka market; they too rely heavily on the access this road provides. A discussion of specific aspects of the direct beneficiary group is included in the Social Soundness Analysis (IV.D.)

Among the indirect beneficiaries, a much larger but more difficult number to identify, are urban consumers in Zambia, especially those dependent upon Zimbabwe maize imports. Since the higher transport costs of imports via alternative routes are almost certain to be passed on to consumers in one form or another, there are major benefits to be realized by improving and maintaining the Zim-Zam road link, which is the route used for the bulk of Zimbabwe maize imports. This is similarly true for consumers of a wide range of other foods and consumer goods produced in Zimbabwe. In addition, there are producers on both sides of the border--farmers in Zimbabwe that produce maize for export, principally in the maize growing region north of Salisbury and Sinoia, as well as producers of bitumen in Zambia's Copperbelt that export to northern Zimbabwe, to name two -- that will benefit from assured access to this important link in the regional road network.

D. Other Donor Interest

On the basis of discussions with the GRZ and other donor representatives, the PP design team and AAO/Zambia have concluded that no other donor has a direct interest in the rehabilitation of this Zambian road link. Donors are, however, assisting the GRZ on other primary and secondary roads and several projects are currently on-going.

A related activity which will be of critical importance to all road building activities in Zambia is the road maintenance focus of the World Bank's Third Highway Project. As will be discussed in the Issues Section, maintenance, or the lack thereof, is a serious problem in Zambia. Recognizing this, the World Bank agreed in 1976 to assist the GRZ in improving its road maintenance capacity. Following Bank appraisals in 1977, a loan agreement was signed in 1978. The loan became effective in late 1979, but only recently have any implementation steps been taken.

The major maintenance components of the Bank project are the provision of three long-term maintenance advisors to the Roads Department, procurement of a substantial package of road maintenance equipment and spares for existing equipment, workshop equipment and tools and training aids, and assistance in reorganizing the Mechanical Services Branch of the Ministry of

Works and Supply. The two objectives of the Bank project are to provide catch-up maintenance on selected primary and secondary roads and to strengthen the GRZ's institutional capacity to carry out the full range of maintenance required to stabilize the existing road network.

Delays in implementing this program were caused by GRZ difficulties in recruiting expatriate staff, without which the equipment could not be ordered. Also, there were problems in negotiating adequate budget levels for the Ministry of Works and Supply/Roads Department and Mechanical Services Branch. These obstacles now appear to have been overcome -- the budget issue has largely been resolved, initial recruitment efforts have been successful and a tender for the maintenance equipment was recently issued. The project is expected to run through 1984, although the impact of this assistance is unlikely to be felt much before the end of 1982, when all advisors and equipment will have arrived. The need for the Bank project is clear. It will eventually have a beneficial impact on all road activities and, more specifically, will complement perfectly the longer term maintenance requirements of the Zim-Zam Road.

IV. PROJECT ANALYSES

A. Engineering Analysis

1. Chirundu to Kafue Section (Zim-Zam Road): Current Status

The section of the Zim-Zam Road from Chirundu to Kafue is 82 kilometers in length. The road has been in service approximately 20 years, although it was not in use for seven years during that period (1973-early 1980) because of hostilities during the Rhodesian war. While the Chirundu border post was closed no maintenance was performed. As a consequence, the road is now in varying stages of distress. Its current state of deterioration is not due to any structural deficiencies as a result of inadequate design. Rather, it is the absence of traffic and maintenance which caused brittleness and cracking of the surface. This permitted moisture to penetrate the protective surface membrane, affecting the sub-grade and causing the failure of many sections of the road. Contributing to this was a growth of vegetation and silting up of side drainage channels with resultant failure of the underlying layers and deformation of the surface, evidenced by alligator cracking. Lack of shoulder maintenance has resulted in dangerous dropoffs and edge ravelling. Longitudinal cracking and edge failures are also evident. Some cross-drainage structure overtopping has resulted in shoulder and embankment erosion and pavement breakup which may indicate a need for increased structure capacity. The Roads Department of the Ministry of Works performed Benkelman Beam deflection tests on the road in May 1980, and completed visual inspections of the road in February and June 1981.

These data have been analyzed by a senior highway engineer from the U.S. Federal Highway Administration (FHWA) as recommended in the PID. The consultant's report is appended as Annex D, Exhibit 1. The repairs program proposed by the Roads Department will rehabilitate the road to its original M-1 standard, the same standard found on the Zimbabwe portion of the road and adequate to handle the projected increases in traffic using the road. The program has been reviewed by the FHWA consultant and the senior REDSO engineer and found to be based on sound engineering principles. Traffic data has been reviewed and the resultant design criteria are based on conservative figures for the weight and number of axle loadings. Design criteria are also based on sub-grade strength, as outlined in the British Road Research Laboratory's Note No. 31, "Guide to the Structural Design of Bituminous Surfaced Roads in Tropical and Sub-tropical Countries," which is used by the Ministry of Works' Roads Department and is acceptable to AID.

Sections with extensive damage from potholes will be reconstructed by removing and discarding the surfacing, ripping up and recompacting the present base and adding a new cement-treated base and surface treatment. Sections which are essentially sound but have high Benkelman bean deflections or a rough riding surface will be overlaid with 50 mm of asphalt concrete to strengthen the pavement.

2. Proposed Work

Phase I of this project will finance the resealing of 33 kilometers of the Chirundu-Kafue section of the Zim-Zam Road during the 1981 dry season ending in late November/December. Repairs to the remaining 52 kilometers of the road are the subject of this Phase II project. An assessment of future work required on this portion of the road indicates that 13 kilometers can be adequately repaired by strengthening the existing pavement and that the remaining 39 kilometers will deteriorate to the point where reconstruction will be necessary. The work will be done during the 1982 and 1983 dry seasons (mid-March/April to late November/December).

The following chart identifies the sections of road and the type of rehabilitation contemplated. The estimated costs for the two types of repairs in Phase II are based on current 1981 prices for similar work contracted by the GRZ Roads Department and their own in-house experience. The costs are then escalated for inflation to the mid-points of the 1982 and 1983 construction periods at a rate of 20% per annum.

Figure 1: Cost Estimates
($US)

	Pavement Strengthening	Reconstruction
1981 prices	$143,750 /KM	$201,300 /KM
1982 prices	$172,500 /KM	$241,500 /KM
1983 prices	$207,000 /KM	$290,000 /KM

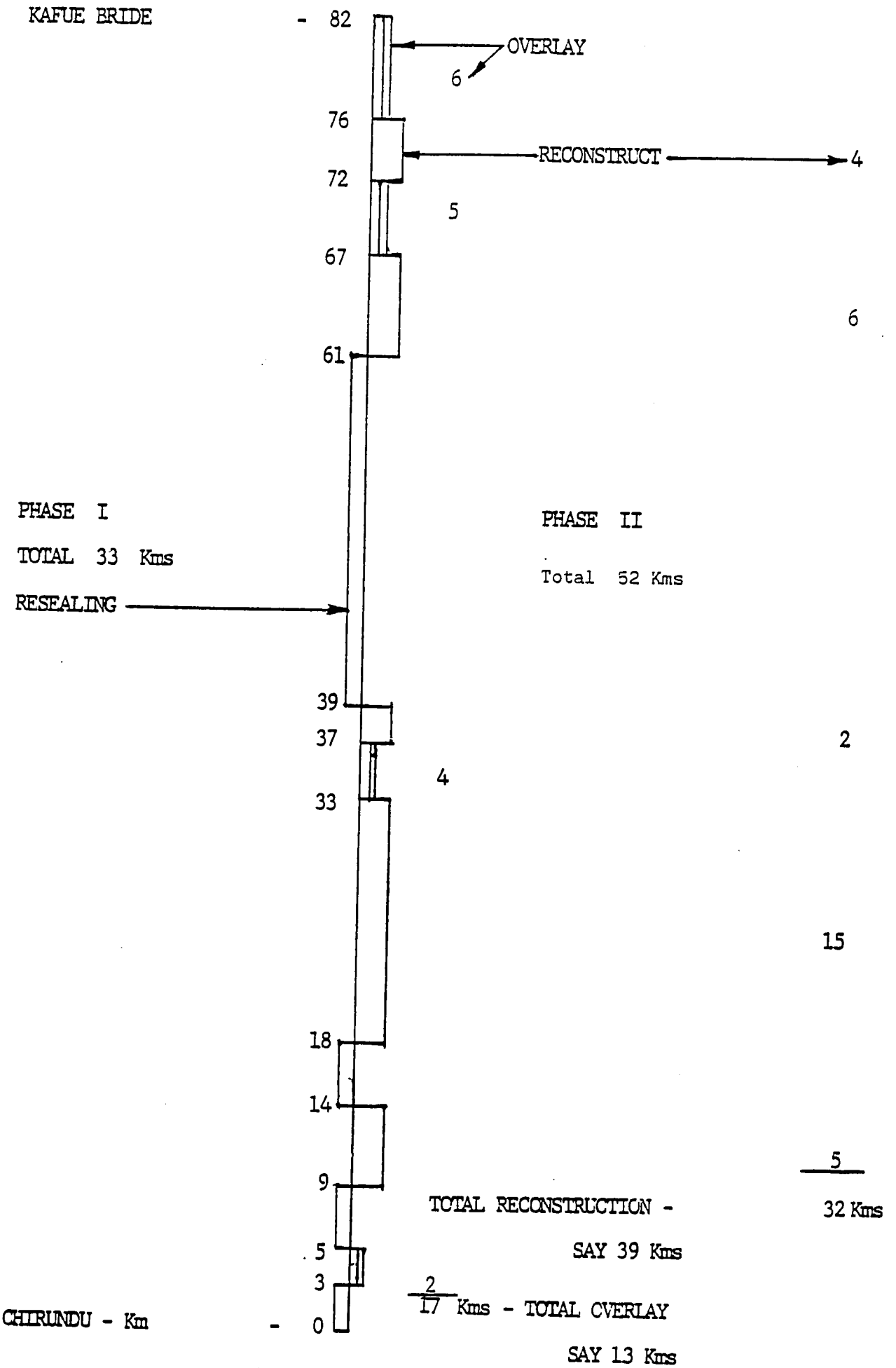
The PP team estimates that the total work to be done under Phase II will increase from 49 to 52 km. The additional 3 km includes the probability that 10% of the Phase I work may not be completed or may deteriorate further to the point where resealing is no longer adequate. The expected work accomplishments per season are as follows:

Figure 2: Projected Work Accomplishments
(in Kilometers)

	1982	1983	Total
Pavement Strengthening	-	13	13
Reconstruction	17	22	39
Total	17	35	52

A cost summary and discussion of cost factors is found in the next section, Financial Analysis. A discussion of the repair procedures to be employed is found in Annex D, Exhibit 2.

Rehabilitation Program
Chirundu-Kafue (Zim-Zam) Road



3. Maintenance: Current Status and Future Requirements

a. Current Status. Road maintenance, or the lack thereof, has been and continues to be a major problem area for Zambia. Planning and coordination of effort is sadly lacking. Preventive maintenance is rare and much of the maintenance that is done is performed on an emergency basis. Shortages of operating funds, trained staff, spare parts and new capital equipment are common and can be traced to the lack of GRZ budgetary resources. The proposed projects cannot hope to tackle this larger problem area independently. Fortunately, the World Bank is attempting to resolve the most pressing aspects of the problem by upgrading the GRZ's maintenance capacity through its Third Highway Project loan. However, the problem is so serious that it cannot be resolved in the near future, i.e. within the next three years. Even if all the necessary equipment were made available immediately (and it will not be), the training of personnel and the backlog of work to be done would require many years to complete. This subject is discussed at greater length in the Issues Section (see Section VI).

In terms of the Chirundu-Kafue (Zim-Zam) Road, the pavement had apparently not been sealed for a number of years before the closure of the road and no maintenance was performed at all on the road for seven years because of the war in Rhodesia and the movement of troops in the area. Even after the road was reopened early last year very little routine maintenance was undertaken. Most work was done in response to emergency situations. The one positive indicator is that there has been more regular patching of potholes this year than in the previous year. Viewed from the GRZ perspective, the fact that in early 1981 a donor appeared who was willing to finance the rehabilitation of the road was sufficient reason to transfer scarce maintenance funds to other, more pressing requirements.

b. Project Initiatives. The situation presented above is not encouraging. While recognizing that this project cannot by itself hope to change the pattern of maintenance in the country, there are several initiatives which we propose to pursue that will enhance the likelihood of adequate maintenance being carried out along the road. First, an AID direct-hire engineer will be assigned to Zambia, principally for managing this project. His responsibility will be to present forcefully and persistently the case for maintenance, impressing upon managerial staff in the Ministry of Works and Supply the cost savings of investing approximately $160,000 per annum for routine maintenance versus five or more times that amount for emergency maintenance to keep the road open to traffic. Second, the AAO/Zambia will follow up on these arguments with senior GRZ officials, particularly in the Ministry of Finance, stressing the importance we attach to sound maintenance as the best way of protecting this capital investment.

Third, as a condition precedent to disbursement, we will require the GRZ to provide us with an acceptable plan describing the steps in plans to take to maintain the road as well as the schedule of inputs to be available for these purposes. This plan would be expected to include the development of innovative and self-help measures, such as using area inhabitants to carry out routine maintenance tasks, installation of user tolls, better allocation of maintenance equipment, etc. The plan would also be specific about a line item in the GRZ recurrent budget indicating the funds to be devoted to the road. The AID engineer/project manager would be involved in following up on the activities in the plan. Fourth, a covenant in the Agreement will require the GRZ to carry out an appropriate maintenance program on the road after the contractor has turned over the road to the Government.

In addition, discussions have been held with Road Department/Ministry of Works and Supply about the installation of a weigh station at some point along the project road to control overloaded vehicles. Several new weigh scales have been contributed to Zambia by the Dutch Government and it appears likely that one of those will be situated on the road. This is yet to be confirmed. Consideration might be given to making the installation of a weigh station a requirement under the project. Lastly, the GRZ is one of five southern Africa states that are intent on improving road standards. A technical group representing Zambia, Zimbabwe, Malawi, Zaire and Mozambique met in later 1980 to agree on common standards. The technical proposals await formal adoption.

These AID initiatives will be reinforced by the World Bank's comprehensive maintenance program. AID/Zambia expects that this combination of action, dialogue and continuous encouragement will enhance the probability that acceptable maintenance will be performed on the road in the future.

c. Future Maintenance Requirements. The 69 kilometers of road with spray and chip surfaces (30 km of resealing and 39 km of reconstruction) will require an additional spray and chip treatment at about five year intervals; the 13 kilometers that are strengthened with bituminous concrete overlay will require a spray and chip treatment at about seven year intervals. The entire road will require routine maintenance of surface shoulders and drainage structures. See the attached chart (Figure 2) for a proposed schedule of major recurrent maintenance actions.

Recognizing the broader problems of road maintenance in Zambia, i.e., shortages of operating funds, trained personnel and equipment, the World Bank is providing inputs to the Roads Department and other involved GRZ entities. To supplement them in some small fashion, the construction contractor will be required to provide two three-cubic meter tipper trucks to the Roads Department work camp situated along the road, exclusively to support maintenance requirements on the road.

Figure 2: Chirundu/Kafue Road

Major Periodic Maintenance (With Phase II) 1982-2001

Year	Phase I Reseal Sections	Phase II Overlays Sections	Phase II Reconstruct Sections (With Premix)	Phase II Reconstruct Sections (Without Premix)
1986	Spray & Chip(*)			
1988		Spray & Chip(*)		Spray & Chip(*)
1991	*		*	
1993				*
1995		*		
1996	*			
1998				*
2001	*		*	

Source: Adapted from Information Provided by RD/GRZ, July 1981

B. Financial Plan

1. Introduction

The financial plan for the rehabilitation of the Kafue-Chirundu Road will require an estimated expenditure of U.S. $17,700,000, over a three year period. The sources of funds are a loan of U.S. $13,100,000 from AID and a local currency equivalent contribution of U.S. $4,600,000 from the Government of the Republic of Zambia (GRZ). In view of the economic conditions in Zambia, the AID loan will be extended on AID's most concessional terms: repayment of the loan principal over a period of forty years, with a ten year grace period. Interest of two percent per annum will be paid during the grace period and three percent per annum thereafter.

2. Uses of Funds

a. AID funds ($13.1 million) will be used to finance 74 percent of all project costs, including the services of a consulting engineer and the major portion of a contract for construction services. The construction contract will also require that the contractor provide the Roads Department with selected soils laboratory equipment and two tipper trucks. An estimated 54 percent of the AID loan (US$ 7.1 million) will be used to finance foreign exchange costs. The remaining 46 percent (US$ 6.0 million) will finance local currency-related costs. Included in the uses of AID funds is an inflation factor of 20 percent per annum and a contingency factor of 20 percent applied to all costs. Given the economic and political uncertainties in Zambia and Southern Africa, as

well as the possibility of contract slippage into 1984, this level of conservatism is felt to be prudent and justified.

b. GRZ funds ($4.6 million equivalent) will be used to finance 26 percent of total project costs. They will be composed of a cash contribution of $4,425,000 equivalent (K3,850,000), largely to finance the local currency costs of the construction contract, plus an in-kind contribution which the design team valued at approximately $175,000. This includes salaries of Ministry personnel, engineering, operating costs, administrative expenses and soils testing. All GRZ resources will be used for local currency expenditures. A contingency factor of 20 percent has been incorporated into the GRZ contribution as well. See the following table:

TABLE 1
Sources and Application of Funds
(US$ 000's)

Application of Funds	AID For Ex.	AID L/Cur.	GRZ L/Cur.	COMBINED TOTAL(US$)1/
1. Services				
a. Construction Contract2/	5,215	4,386	3,635	13,236
b. Consulting Engineer3/	690	657	-	1,347
c. Supervision, Soils testing3/	-	-	175	175
2. Contingency Factor (20%)	1,176	976	790	2,942
TOTAL	7,081	6,019	4,6004/	17,700

Notes

1/ A breakdown of total project costs anticipates approximately 40 percent foreign exchange costs and 60 percent local currency costs.

2/ The amount is based on the following work: 1982 - road reconstruction of 17 km; 1983 - road reconstruction of 22 km and pavement strengthening of 13 km.

3/ Engineering services are estimated at about 12 percent of construction contract costs.

4/ GRZ contributions will consist of U.S. $4,425,000 in equivalent cash inputs and U.S. $175,000 in in-kind services

The cost estimates used in arriving at total construction costs were derived from recent unit price contracts that the Roads Department is monitoring for similar kinds of work on similar kinds of roads in the Copperbelt. Those estimates have been increased by an inflation factor of 20 percent per annum for 1982 and 1983, which the Roads Department and the design team believe is an accurate reflection of recent price increases. Current unit prices for reconstruction are $201,000/Km; 1982 prices (mid-point of construction) are $241,500/Km and 1983 prices are $290,000/Km. Pavement strengthening is currently $143,750/Km, and is expected to be $207,000/Km by mid-point of the 1983 construction season. The exchange rate used in these calculations is Kwacha 1.00 equals US$ 1.15.

3. Disbursement of Funds

The proposed disbursement period for the AID loan funds will be 36 months from the date of initial disbursement. Given the GRZ's capabilities, it is anticipated that both contracts will be host country contracts and that AID's standard letter of commitment/letter of credit disbursement procedures will be utilized.

The manner and timing in which the cash portion of the GRZ contribution will be made available was not resolved during the PP preparation process. Therefore, discussions will be held during the negotiations on the Project Agreement to work out the details. As a condition precent to disbursement, the Government will be required to provide AID with a plan describing when and in what fashion the GRZ contribution will be made.

In the following table a tentative expenditure pattern is shown on an annualized basis for both AID and GRZ funds. This is based on a total of 17 kilometers of road reconstruction completed in 1982. In 1983, 22 kilometers of road reconstruction are projected. All pavement strengthening, totalling 13 kilometers, is expected to be done in 1983. The 1984 expenditures represent the payment of retention monies on construction costs.

TABLE 2

Projected Expenditures by Fiscal Year
(US$ 000's)

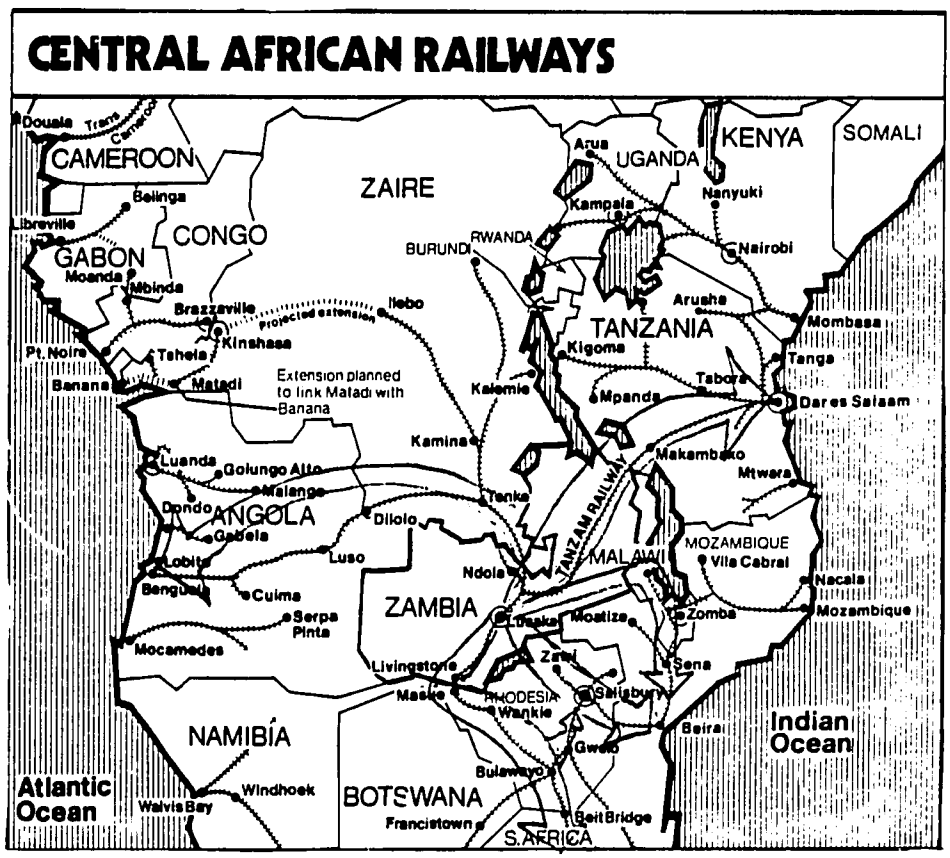
Fiscal Year	AID	GRZ	TOTAL
1982	3,462	1,375	4,837
1983	6,985	2,594	9,979
1984	2,653	631	2 884
TOTAL	13,100	4,600	17,700

C. Economic Analysis

1. Macro-Economic Rationale

The project shows a favorable benefit-cost ratio (1.09) and a positive economic rate of return (14%). These figures are arrived at using the most conservative assumptions about traffic growth, traffic composition and road user savings. More optimistic projections would result in a much higher B/C ration (1.73), and higher IRR (24%). These are discussed later in this section. Notwithstanding the favorable albeit marginal economic conclusions, the principal rationale for supporting the road is its strategic importance to Zambia's transportation system. Given Zambia's landlocked position, the fact that rehabilitating the Zim-Zam Road will strengthen an important (as well as the shortest) route to the sea overrides many strictly economic considerations. The political turmoil within the region over the past two decades has heightened Zambia's sensitivity to the vulnerability of its geographical location, a key factor which cannot be adequately calculated, but which is a major point in the GRZ determination to proceed with road rehabilitation.

The following map depicts vividly a situation whereby 5 of the country's 6 routes to the sea require transit through not one but two or more countries to reach a port. The longest of these routes is to South African ports (East London and Port Elizabeth-over 3200 km), while the shortest is the proposed road link to the railhead in Zawi for transfer to Beira. This route is approximately 40% shorter than the next best link through Malawi, and about half the length of the Tazara or Benguela railroad lines.



African Business August 1979

To appreciate her position, an understanding of Zambia's recent history of transport problems is necessary. During the Federation period (1954-68) and even after Rhodesia's Unilateral Declaration of Independence in 1965, the bulk of Zambia's external trade passed through Rhodesia and the Mozambique port of Beira. With the closure of its border with Rhodesia in 1973, alternative routes for both imported goods and exports of copper had to be found. Until 1975, approximately one-half of the external trade was rerouted through Angola via the Benguela Railway to the port of Lobito, about 35-40% went by road through Tanzania to the port of Dar es Salaam, and the rest was routed through various other ports and by air. However, in 1975, events in Angola severely restricted and eventually halted operations on the Benguela Railway. Most goods then had to shift to the TAZARA line (the Tanzania-Zambia Railway), built by the Chinese to overcome the closure of the Rhodesian border and to provide an alternative route for Zambia's exports of copper and for her imports, particularly of maize and wheat. The remaining traffic continued to go by road to Dar es Salaam and other ports.

Since then, continuous problems with the TAZARA line have demonstrated it is incapable of handling more than half of Zambia's external trade. The line, which was intended to bring Zambia and Tanzania closer together and to help strengthen the Front Line states vis a vis Rhodesia, has also brought about more than a little measure of frustration, disappointment and mutual recrimination. The severe operating problems produced by shortages of wagons, spare parts and mismanagement placed further pressure on road links via Dar es Salaam and through Malawi to Mozambique. Eventually, TAZARA's shortcomings forced the reopening (on a limited scale) of the southern rail route to ports in South Africa in October 1978.

An article in the August 1979 issue of "African Business" reported the following:

> "Zambia may yet be forced to reopen the Chirundu road route, linking Lusaka and Salisbury, because of the backlog of over 100,000 tonnes of goods which are held at South African ports and inside Zimbabwe-Rhodesia. Goods held up include 50,000 tonnes of maize, 15,000 tonnes of fertiliser, 25,000 tonnes of wheat and 1,000 tonnes of lubricants. Another 18,000 tonnes of wheat is due at South African ports in mid-July. Zambia will also be ordering another 100,000 tonnes of maize from South Africa, which should arrive in Zambia before the next rainy season. Normal functioning of the southern route is essential for Zambia if it wants to maintain copper exports as well as essential imports."

It is no wonder that independence for Zimbabwe in April 1980 was greeted with great anticipation by Zambia's transport planners. Since then, although rail transport has improved noticeably, there are still problems faced by a lack of wagons and locomotives in Zimbabwe, congestion in South African ports and on its rail system and a limited, albeit increasing capacity in Mozambiquean ports. Consequently, Zambia's alternative road links are still critical when all the uncertainties and risks are considered. In view of the situation, it is unlikely that Zambia will rely on any one or even two routes for the foreseeable future.

2. Alternative Transport Routes

Zambia has six road, rail or combination road and rail routes to the sea. The shortest of these is via the Zim-Zam Road to Salisbury (or Zawi) for a transfer to Beira by rail. Total distance is approximately 1040 km (Lusaka-Salisbury: 490 Km; Salisbury-Beira: 550 Km). The next shortest alternative via Malawi is 1490 Km (Lusaka-Lilongwe: 745 Km; Lilongwe to Beira: 745 Km), or 40% longer. The longest routes (to ports in South Africa) are over 3200 Km, or 300% longer. Furthermore, not all of these routes are fully functioning options, e.g. to Lobito. See the attached exhibits for additional information.

Zambia would clearly prefer to have available as many of its alternative routes as feasible, particularly since the movement of its external trade requires more capacity than any single route could handle. The Zim-Zam road clearly cannot be the answer to Zambia's complex transport problems. The country must rely in great part on its rail links to handle the bulk of its export or import goods, especially given the higher cost of moving cargo by truck. The World Bank estimated that after its border closure with Rhodesia in 1973, the average cost per ton of inland transport between Zambia and coastal ports rose 55% above the average cost in 1972, mainly because long-distance road transport is more costly than rail service, and because alternative routes are longer. All this occurred shortly before the first of the major increases in petroleum prices.

The Zim-Zam road has substantial value, primarily as the shortest route to Salisbury and the maize growing areas north of Salisbury, but also as a bi-modal (road-rail) link to the railhead at Zawi and the Mozambique ports. Furthermore, to the extent it is used it will ease the traffic (and deterioration) on other routes. This road offers a reliable, low capital cost option to a country that is extremely concerned with maximizing its transport options.

3. Benefit-Cost Analysis

The economic feasibility of the project has been demonstrated to be favorable on the basis of benefit/cost analysis. These findings are also supported by other positive factors which are non-quantifiable. The analysis is based on a twenty-year period. A discount rate of 12% has been utilized in accordance with IBRD practices, although sensitivity tests were run on the

discount rate as well as on other variables. Assumptions against which various alternatives were weighed include: variations on average daily traffic, composition of traffic, road user savings, road maintenance savings, and assumptions regarding the extent and timing of reconstruction versus overlay. These are discussed in detail in an economic report prepared by the PP team economist and available in AFR/DR/SA and AFR/SA. Highlights of the report are included in the economic appendix (Annex E).

The benefit/cost ratio for the project ranges from 1.05 to 1.73 percent, depending on the assumptions selected. The design team believes that the most conservative set of assumptions may also be the most realistic, resulting in a B/C ratio of 1.09. The internal rate of return for the project ranges from 13 to 24 percent, with the most realistic estimate being about 14%.

D. Social Soundness Analysis

1. Socio-Cultural Context and Beneficiaries Discussion

The proposed project is unlikely to have any significant positive or negative social impact on the target population. The project entails rehabilitation of a trunk road that runs through a rather lightly settled area. No changes in road layout are proposed and the project will not affect existing rights of way. Most of the population within the area serviced by the road consists of farmers or, in some cases, farmer-herders. The area, including virtually the whole length of the road from the top of the escarpment to Chirundu, falls under the tribal rule of the Tonga Chief Sigongo. That section of the road from Kafue to the Kafue Gorge dam turn-off is state land, leased by small commercial farmers from the state for periods of either 14 or 99 years. The remainder of the area is tribal land, with the exception of the township of Chirundu.

During the rehabilitation there will be employment opportunities for approximately 300 day laborers. The likelihood is that this labor will be recruited from among the population living in the area. Examples of similar construction work in the area confirm this pattern. The work force is almost certain to be exclusively male, in accord with the prevailing customs and traditions of the tribal groups in the area. Group-oriented work activities among the Tonga are common, which will facilitate recruitment of laborers and organization of work gangs.

The anticipated traffic using the road will consist largely of heavy commercial vehicles transiting the route between Zimbabwe and Zambia/Zaire. This traffic will have almost no intereaction with the people in the area. However, the road will also be used by smaller vehicles, including passenger vans, government and non-government vehicles. The former will continue to provide access and egress to the area as well as a transport mode for the semi-commercial farmers working near the road who need access to the markets in Kafue and Lusaka and inputs from those areas. Improving the

road will help to facilitate that traffic. Both government and non-government vehicles will include movement of service personnel and goods, i.e., medical staff and supplies to the mission-run hospital near Chirundu and other rural clinics as well as teachers and school supplies to the several primary schools in the area. These are not new services, however, and the impact of the project will only be to facilitate that movement. There are no groups that appear likely to be adversely affected nor do there appear to be any practices or policies associated with the project that would disadvantage the target population or interfere with the equitable distribution of benefits.

2. Role of Women

As the foregoing indicates, women are not expected to benefit directly from the project in terms of either employment opportunities, skills enhancement or changes in family role. Women will, however, benefit indirectly in several ways. To the extent that the work force temporarily employed by the project shares its income with female family members, women will also have increased disposable income. Given the income levels of the target population it is likely that most of those additional resources will be utilized to improve basic living conditions. Any improvements in access to services will be shared by men and women alike. Additionally, there is some possibility of ancillary employment associated with providing services to the work gangs, e.g., preparation of food. No firm data on this is currently available. In summary, no significant change in the role of women within the target population group is contemplated.

3. Summary

The proposed project does not lend itself to accelerating either positive or negative social change; its impact on the target population is likely to be minimal, except for the temporary employment opportunities for a small segment of that population. No significant social issues have been identified during the preparatory phases of the project.

E. Institutional Assessment

1. Organizational Structure and Responsibilities 1/

The Roads Department of the Ministry of Works and Supply is responsible for construction and maintenance of the primary and secondary road network. This entails administering all roads designated as International Main (T) and Main (M), which form part of the primary system linking provincial capitals with one another and with neighboring

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1/ Much of this information is derived from the World Bank's Third Highway Project Report and revised, as necessary by the PP design team.

countries, as well as District (D) roads which link the primary network with district headquarters and economic centers. The Zim-Zam road is a category T road. Roads in these three categories total approximately 19,500 kilometers. Of these, 26% are paved, 39% are all-weather gravel and 35% are earthen roads. The remaining 16,500 km of designated roads are administered and maintained by Rural Councils under the Ministry of Provincial and Local Government Administration.

The Roads Department is organized around a central services group in Lusaka and nine provincial divisions, each headed by a Provincial Road Engineer. The central organization is divided into Planning, Works and Administrative sections. Among the responsibilities of the Roads Department is construction and maintenance. All construction of new roads and rehabilitation of existing roads is done on a contract basis and is monitored by the Roads Department. All maintenance work is done by in-house forces except for work requiring large inputs of bitumen such as slurry sealing and spray and chip sealing. Equipment is issued to the Roads Department by the Ministry's Mechanical Services Department, which is a government-wide equipment pool and vehicle repair center. The Provincial Road Engineers are delegated responsibility for both road maintenance and minor design and construction work in their respective regions. The organization chart of the Roads Department is shown in Annex D.

With regard to the proposed AID project, the Roads Department will itself undertake all soils testing and design work. These tasks are being carried out under donor-financed contracts on the other major road projects; therefore, the Roads Department's Planning and Design Division will have staff available to prepare all project plans and specifications and the Materials Laboratory section will be able to conduct all soils testing and analysis. The contract FHWA engineer and the senior REDSO engineer have both confirmed the capability of those staffs to carry out the assignments in a manner acceptable to AID and without conflicting with current or projected workload.

2. Staffing

A persistent constraint faced by the Roads Department in carrying out its tasks is the shortage of qualified staff, both in the field and in Lusaka. There appears to be a fairly steady vacancy rate of approximately 30-40% in the professional ranks. For example, the Southern Province, which will provide maintenance for the AID project, has 7 of 23 technical/professional positions vacant at this time. Overall the vacancy rate would be appreciably higher if all expatriate, OPEX-type engineers were to leave. There has been a slow improvement in the development of a host country staffing capacity -- the Director of Roads is a qualified black Zambian, as are several of the Provincial Engineers. Nonetheless, there are still requirements for additional expatriate skills, as the World Bank recognized by providing funds for three advisory positions in the Maintenance Section.

3. Maintenance

In 1977, the World Bank report on the Third Highway Project noted that "the Roads Department's road maintenance organization is basically sound although planning and coordination are virtually nonexistent...The quantity and quality of road maintenance is unsatisfactory and has not kept pace with the expanding road network. There are no regular programs for routine and periodic maintenance, and the road network has consequently deteriorated." (p.13). Four years later, although our comments are not so sweeping because of AID's narrower focus, the PP design team reached a similar conclusion.

Maintenance will continue to be a problem area for some time. The shortages of operating funds, trained personnel, spare parts and capital equipment cannot be overcome very quickly, although several positive signs do indicate that the World Bank maintenance program will make a noticeable impact on both routine and recurrent maintenance operations. Many of the numerous problems facing the organization begin with the lack of adequate equipment and shortages of operating funds. Both of these constraints are being addressed through the World Bank project. In addition, as specifically relates to the proposed project, the Phase I activity will provide a vehicle to the Roads Department engineer supervising the resealing work, and the Phase II activity will provide two three-cubic meter tipper trucks to the road camp responsible for maintaining the road to permit work crews to carry out drainage and ditching work and pothole repairs. As explained in the Issues section (Section VI), this project cannot by itself hope to change the pattern of road maintenance in the country. At best we can require the GRZ to agree to maintain the road, all the while recognizing that whatever maintenance resources are applied to maintaining this road are almost certainly being taken from maintenance funds destined for other roads.

F. Environmental Considerations

A negative/resolved determination was made in an Initial Environmental Examination which was approved June 1, 1981 for Phase I of the project. Since Phase II consists of rehabilitating 52 kms of the same road and entails no additional road construction, no further environmental analyses are deemed necessary.

V. Implementation Plan

A. Implementation Responsibilities

1. GRZ - Ministry of Works and Supply/Roads Department

The Roads Department of the Minitry of Works and Supply will have the prime implementation responsibility for the work to be done under this project. Certain tasks will be accomplished with in-house personnel -- soils testing and preparation of designs and specifications and tender documents. However, the Roads Department will have to contract with an engineering consultant to supervise the construction.

Although there has been no formal designation, the GRZ project coordinator would normally be the Director of Roads, a capable Zambian engineer/administrator. However, his occupation with the Department's planning and administration responsibilities rules out his day-to-day involvement in implementation. The Deputy Director of Roads or Acting Works Division Chief will more likely be assigned the responsibility. Both are experienced British expatriates working on long-term contracts.

With regard to specific implementation tasks, the field testing of "in-place" materials needed to confirm design assumptions and the testing of sources of gravel for new base materials will be done by the Materials Section. This section will also develop estimates for quantities of work involved and draw up specifications and a scope of work. All testing required during construction will also be done by the Materials Section at the request of the engineering consultant supervising construction.

The Materials Section is headed by an experienced road engineer with four good materials technicians trained in the U.K. plus four other technicians and 20 laborers on his staff. Since much of the existing workload from other projects is being done by consultants or contractors, the work required for this project can be performed by the existing staff. Necessary design work and drawings will be prepared by the Planning and Design Section. A location map, several cross sections and drainage structure drawings will be required. The existing staff of one designer, three draftsmen and three surveyors will be able to handle this design load without difficulty.

All services to be provided under the project will be procured on a host country contract basis. The suitability of the Roads Department to assume this responsibility was confirmed by the contract FHWA engineer. Preparation of the request for proposals and the tender documents will be assigned to the contracts section (headed by a capable engineer with two assistants). The contract documents will be prepared

in the standard GRZ format with AID clauses added as required. This will follow the pattern established for the Phase I contract and should not present many difficulties, although it will take continuity of management and considerable time. The bid processing and Central Tender Board review and award procedures will be the same as those used in Phase I. The Contracts Section will monitor construction progress and process construction contractor payments.

Supervision of construction will be contracted to an engineering consultant. The consultancy staff will consist of a resident engineer, two assistant engineers and three field inspectors. The assistants will carry out field materials surveillance and surveying inputs; sampling and laboratory testing support will come from the Materials Laboratory Section of the Roads Department. The consultant engineer will provide his own surveying equipment and transportation, be responsible for locating housing for his staff and provide transportation as needed for the field and laboratory testing program.

The scope of work and request for proposals for the engineering consultancy will be developed by the Roads Department with some assistance by AID. Contracting will be in accordance with standard GRZ procedures, and AID will approve all documents before issuance and monitor general progress.

2. AID

To provide adequate backstopping and project management capability for this and other infrastructure projects, AAO/Zambia has added an engineering position to its staff as the project manager. An engineer has been assigned to the position and is currently in country on a short-term TDY. This person will be expected to provide the continuity necessary to avoid delays in implementation. He will monitor the actions of the GRZ, the engineering consultant and the construction contractor. Site visits and monthly reports from both the engineering firm and the contractor will serve as the primary monitoring tools.

As shown in the following plan, REDSO/EA, EAAC and RLA/Mbabane will each have roles in the implementation process. The RLA will negotiate the Project Agreement, approve CPs and participate in IFB and RFP preparation and the establishment of payment arrangements. REDSO will provide all engineering services until the engineer position in AID/Zambia is filled. In addition it will participate in approving short-listed firms, issuance of IFB/RFP documents and approval of contractor selection. The Regional Contracting Officer will be involved in consultations on contracts preparation and approval of contracts. AID/W will be expected to participate in arranging for CBD publication and receipt of prequalification data.

To reduce the lengthy contracting process, the PP team has taken a pre-implementation action aimed at obtaining expressions of interest/prequalification information for both the engineering

consultancy and the construction contractor by October 20. This information will be solicited from firms in both the U.S. and selected Code 941 countries with experience in East/Central/Southern Africa. Advertisements will be placed in the Commerce Business Daily by AID/W and in newspapers in Lusaka, Salisbury, Lilongwe and Nairobi, which, based on prior AID experience, is where firms with both interest and qualifications are most likely to be located. Draft advertisements have already been prepared for GRZ review and approval and are expected to be placed in August or early September; AID/W will be requested to expedite placement of a notice in the Commerce Business Daily (CBD) at the same time.

Given the seasonal nature of construction work in Zambia and the desire to complete the contracting process and initiate work as early as possible in the 1982 dry season, special attention and expediting efforts must be applied by all action parties if this project is to be brought off as planned (see attached chart for target implementation dates). These dates have been reviewed by Roads Department personnel and AAO/Zambia staff and are considered to be tight but feasible. It should be noted that the financial implications for each month of delay will add upwards of $300,000 to the cost of the project.

B. Implementation Plan

The timetable of implementation actions that follows has been divided into four principal action streams. As will be noted, the design team decided to take certain pre-implementation steps to speed up the lengthy process of contracting for engineering supervision and construction contractor services. By going out now to obtain expressions of interest, the contracting process will be reduced by approximately three months, resulting in some cost savings. Since construction should begin as soon as possible after the end of the rainy season in April, the 2-3 months saved now will still permit considerable work to be accomplished during the 1982 dry season.

An assumption that has been incorporated into the timetable is the assignment of an AID engineer to Lusaka by 1 November 1981, to monitor all aspects of the project. Without that on-site presence additional delays are almost certainly inevitable. On all other aspects, the design team believes the implementation plan is tight but feasible.

TIMETABLE OF IMPLEMENTATION ACTIONS

1. GENERAL

DATE	ACTION	ACTION PARTY(S)
8/10	PP Completed	USAID/RLA/REDSO
9/10	PP Reviewed/Authorized	AID/W
9/25	Project Agreement Negotiated/Signed	USAID/RLA
11/15	Conditions Precedent Satisfied	USAID/GRZ/RLA

2. ENGINEERING SUPERVISION CONSULTANT

8/10	Draft Ad for Prequalification	GRZ/USAID
9/25	Central Tender Board Review and Publication	GRZ
9/25	Publication in Commerce Business Daily	AID/W
10/1	Draft Scope of Work/RFP	GRZ/USAID/RLA/EAAC
10/20	Receipt of Prequalification Data	GRZ/CTB/AID/W
11/15	Review/Recommend Shortlist	USAID/GRZ
12/15	Approval of Shortlist Issuance of RFP	USAID/REDSO/CTB
1982		
2/1	Receipt of Proposals	GRZ/CTB
3/1	Recommendation for Award and Approval	GRZ/CTB
4/1	Negotiate and Execute Contract	GRZ/USAID/RLA/REDSO
4/1	AID Approval Provided	USAID/RLA
5/1	Payment Arrangements Established	GRZ/USAID/EAAC/AID/W
6/1	Initial Personnel In Place	Contractor
12/83	Complete Supervision	Contractor

3. PREQUALIFICATION OF CONSTRUCTION CONTRACTOR

8/15	Draft Ad for Prequalification	GRZ/USAID
9/25	Central Tender Board Review and Publication	GRZ
9/25	Publication in Commerce Business Daily	AID/W
10/15	Receipt of Data	GRZ/AID/W
11/15	Review/Recommend Shortlist	USAID/GRZ
12/15	Approval of Shortlist	USAID/GRZ

4. CONSTRUCTION CONTRACTOR SELECTION

11/1	Soil Testing Completed	GRZ
11/15	Design Work Completed	GRZ
12/1	Tender Documents Prepared	GRZ
1982		
1/1	IFB Approval/Issuance	GRZ/USAID/RLA/EAAC
2/1	Site Visit	GRZ/USAID
3/1	Bids Received	GRZ/CTB
4/1	Evaluate/Recommend Contractor Award	GRZ/CTB
4/5	Review and Approval of Selection	USAID/REDSO
5/1	Negotiate and Execute Contract	GRZ/CTB
5/1	AID Approval	USAID/RLA
6/1	Funding Arrangements Established	GRZ/EAAC/USAID/AID/W
7/4	Mobilize/Start Work	Contractor
12-83	Complete Construction	Contractor

C. Evaluation Plan

Two discrete evaluations of the project, covering both Phase I and Phase II, will be undertaken. In addition to these evaluations, the Phase II contractor will submit to AID monthly reports focussing on physical progress and any constraints inhibiting progress and/or attainment of objectives. The AID/Zambia direct-hire Engineer/Project Manager will provide on-going monitoring of the rehabilitation work. He will also work with the GRZ in developing and implementing a data collection system to support the evaluations. Periodic traffic counts should be made at times and locations specified by the Project Manager. In addition to recording the number, type and weight of vehicles utilizing the road, efforts should be made to collect data on the origin/destination of the vehicles and their goods, the types and amounts of cargo transported over the road and freight rates.

1) A final evaluation of Phase I will be scheduled for May 1982, after the rainy season, and will focus on the following:

(a) whether or not road repairs and pavement re-sealing were carried out to specification and in a timely manner;

(b) the adequacy of the resealing design, with evidence gathered from conditions following the rainy season;

(c) preparation of a revised implementation plan for repairing and resealing any portion of the 33 kilometers which may not have been completed prior to the evaluation or is in need of further attention;

(d) examination and recommendations regarding performance of the contractor, GRZ Ministry of Works and Supply and AID/Zambia in effectively implementing and monitoring the project;

(e) identification of critical implementation issues or activities which may warrant specific discussion or actions by appropriate parties prior to Phase II implementation; and

(f) up-dated assessment of GRZ road maintenance capabilities.

The evaluation team should be composed of the following members:

- REDSO/EA Project Design Officer
- REDSO/EA Evaluation Officer
- REDSO/EA Civil Engineer
- appropriate GRZ officials

2) A final evaluation of Phase II will be scheduled for early 1984 upon completion of road rehabilitation. Although it will be too early to assess fully achievement of the project goal, the evaluation will focus on the following:

(a) whether or not complete reconstruction of 39 kilometers of road and pavement strengthening of an additional 13 kilometers was carried out according to specification and in a timely fashion;

(b) adequacy of the road rehabilitation design as may be revealed by any factors which become evident during the work or through use;

(c) examination and recommendations regarding performance and capabilities of the contractor, GRZ Ministry of Works and Supply and AID/Zambia in effectively implementing and monitoring the project, including an analysis of critical issues, if any, which may have arisen during project implementation;

(d) a summary assessment of the GRZ's plans for sustained road maintenance;

(e) a preliminary assessment of the socio-economic implications of the rehabilitated road as may be reflected in increased road usage, stable or decreased food prices, improved flow of goods on the road, etc.; and

(f) a determination of the feasibility/desirability of a post-project impact and road condition analysis which could be undertaken in 1986.

The evaluation team should be composed of the following members:

- REDSO/EA Evaluation Officer
- REDSO/EA Civil Engineer
- REDSO/EA Sociologist/Anthropologist
- Transport Economist (contract)
- appropriate GRZ officials

VI. Project Issues

The PP design team has identified an issue that may affect the project after final disbursement -- maintenance of the road. The Project Paper (Section IV.A) proposes several actions which we believe will address the issue, and requests AID/W endorsement of what is proposed.

As in most developing countries, it is far easier to obtain resources for a new road than it is to find funds to maintain an existing one. The concept of protecting capital investments by effectively maintaining them is understood but not always put into practice. Zambia is no different in that regard than other countries. Budgetary allocations have been inadequate to maintain properly the existing road network. One donor, the World Bank, is working on the problem by supporting the maintenance operations of the Roads Department and other GRZ entities involved. The assistance being provided is discussed earlier in Section III.D. of the paper. One of the conditions of its support is that the GRZ will increase in real terms its budgetary allocations for maintenance over a period of several years. This will generally improve maintenance throughout the country, although the process will be slow due to the magnitude of the problem. Informal discussions with the World Bank and the Ministry of Works and Supply are being initiated to determine whether the Chirundu-Kafue section can be included on the list of roads to receive particular attention under the Bank's maintenance program. In these discussions, however, AID is faced with something of a dilemma -- in the absence of sufficient funds for all necessary maintenance it may be unreasonable to expect the GRZ to assign resources to this activity when other important roads are in much greater need of maintenance. The timing of maintenance inputs is a further complicating factor. Although routine maintenance will be necessary throughout the rehabilitation period, periodic maintenance will not be required until 1986, almost three years after completion of the project. Thus AID is being asked to move forward on the project largely in expectation of the GRZ's good intentions, a somewhat suspect prospect.

Without attempting to resolve fully the issue, the Project Paper proposes the inclusion of two legal requirements in the Project Agreement to indicate to the GRZ the importance we attach to proper maintenance. The first involves a condition precedent to disbursement of funds requiring the GRZ to present to AID an acceptable road maintenance plan (routine and periodic) to be carried out on the road and the schedule of resources to be made available for these purposes. A second requirement would be the inclusion of a convenant requesting the GRZ to use its best efforts to maintain the road in proper conditions after disbursement is complete. Other possible requirements have been considered and found wanting.

In addition, an exchange of letters is being initiated with the Ministry of Works and Supply to determine whether a weighing station will be introduced along the road. Much of the damage and deterioration to the road's surface is the result of axle overloading. There is

agreement that thru-traffic to Zimbabwe is not a concern because of the effective weight control measures used in that country. However, the absence of scales on the Zambian portion of the Zim-Zam Road means that non-thru-truck traffic is not controlled and probably accounts for a good portion of the damage related to overloading. The Dutch Government recently contributed 10 weigh scales to the GRZ. The decision on where these will be installed has yet to be made, although we have informally been informed that this road will be the site for one of those scales. The AAO/Zambia is in the process of confirming this point and no additional action is believed necessary at this time.

An additional factor that provides an indication that the GRZ is serious about improving road standards is the convening in December 1980 of a group of countries in the region (Zambia, Zimbabwe, Malawi, Mozambique, Zaire) to establish common standards for axle loadings and use of weighing stations to control overloading of trucks. This technical group agreed in principle to:

(1) not allow overloaded vehicles to proceed;

(2) impose prohibitive fines on a ton/kilometer basis; and

(3) cooperate in the use of weigh bridges at their common borders.

The countries have not yet acted on these recommendations from the meeting. Admittedly, the absence of uniform standards is only a small part of the problem; what is more important is adequate enforcement, if standards are to mean anything. For this AID may have to rely on the Government's own self-interest. If the lack of maintenance and controls in the future were to prevent grain shipments from Zimbabwe, the Government would clearly undertake whatever actions were necessary to keep the road open. Therefore, although the Project Agreement will require adequate assurances of proper maintenance, it is the GRZ's realization of its own self-interest that will provide a more lasting incentive to control traffic and to insure that maintenance on the road is carried out.

VII. Negotiating Status, Waivers and Special Conditions

Negotiations with the GRZ on both phases of this project have proceeded well although a degree of uncertainty was introduced in late June which has not yet been fully worked through. The Minister of Works and Supply has, however, expressed his appreciation at the speed with which AID is responding to the Government's request for assistance, and Ministry of Works/Roads Department personnel have cooperated fully with the PP team.

There is one area of concern which may hold up the contract award under Phase I and may also cause problems in negotiating the Phase II agreement -- taxation. This matter has been broached with the Ministry of Finance and although a satisfactory resolution for the Phase I award is anticipated shortly, i.e. exemption from taxes, duties or customs will be granted, the issue is not yet resolved. Additional negotiation may be required prior to the signing of the Project Agreement for Phase II.

With regard to waivers, waiver requests for Code 935 materials and vehicles is included in Annex B, the Executive Committee for Project Review should be aware that additional individual waivers may be requested for specific items at a later date. These items may include additional construction materials, construction equipment, house furnishings and appliances. No waiver for services for either the construction contractor or the supervisory engineering firm are anticipated at this time; the source is expected to be AID Geographic Code 941. For the items mentioned previously, however, the need for additional waivers and the amounts beyond $500,000 cannot be accurately determined at this time; after a contractor or firm has been selected the RLA/Swaziland and the REDSO/EA Commodity Management Office will determine and prepare additional waiver requests, if necessary.

With regard to special conditions or covenants in the Project Agreement, the PP team proposes the following conditions: (1) as a condition precedent to disbursement for construction, the GRZ is to provide final plans and specifications, tender documents cost estimates, time schedules and executed contracts for both construction and supervision services, as well as a plan describing when and in what fashion the GRZ contribution will be made; (2) as a condition precedent to disbursement, the GRZ will provide AID with a plan describing the steps it plans to take to maintain properly the road after rehabilitation is completed as well as the schedule of resources to be made available for these purposes; and (3) as a condition precedent to disbursement the GRZ will provide AID with satisfactory evidence of its intent to assume any additional costs related to finishing the work determined under Phase I if resealing is not completed prior to the rainy season.

In addition, to protect the investment in the road, the team proposes a covenant requiring the GRZ to carry out an appropriate maintenance program on the road after the contractor has turned over the road to the

Government. A second covenant will require that the two trucks to be provided for maintenance work on the road be used exclusively for those purposes and also be adequately maintained. AID/W concurrence is being sought for these special conditions and covenants.

If AID/W authorization of this regional project is provided in a timely manner, and assuming continued cordial and constructive relations with the GRZ, the Project Agreement could be negotiated and signed by September 25, 1981.

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ANNEX A
OFFICE OF THE MINISTER
MINISTRY OF FINANCE
P.O. BOX 50062
LUSAKA

28th May, 1981.

Ambassador Frank G. Wisner,
Embassy of the United States of America,
LUSAKA.

Your Excellency,

I wish to thank you for your letter dated May 18th and also for the one that I have just received of today's date. I must apologise I have not been able to respond to your letter because I did not return from London until yesterday.

I am happy to confirm that the Government is in a position to pledge between K4 to K5 million towards the rehabilitation of the Kafue-Chirundu.

Yours sincerely,

Kebby S. K. Musokotwane, MP
MINISTER

Department of State ANNEX A INCOMING TELEGRAM

PAGE 01 LUSAKA 03708 091305Z 0308 069527 AID5602
ACTION AID-35

ACTION OFFICE AFDR-06
INFO AFEA-03 AFSA-03 AFDP-02 PPCE-01 PDPR-01 PPPB-03 GC-01
GCAF-01 GCFL-01 ENGR-02 RELO-01 MAST-01 /026 A2 X09

INFO OCT-01 AF-10 EB-08 /054 W
------------------022067 091318Z /53

P 091010Z SEP 81
FM AMEMBASSY LUSAKA
TO SECSTATE WASHDC PRIORITY 7908
INFO AMEMBASSY MBABANE PRIORITY
AMEMBASSY NAIROBI PRIORITY

UNCLAS LUSAKA 3708

AIDAC

AID/W FOR AFR/DR PASS L HAUSMAN AND AFR/SA

MBABANE FOR RLA

NAIROBI FOR REDSO/EA

E.O. 12065: N/A
SUBJECT: ZIM ZAM ROAD: PHASE II REQUEST

REF: HAUSMAN/PATTERSON TELCON OF 9/8/81

GRZ'S 9/2/81 REQUEST FOR PHASE II IS QUOTED FOR YOUR INFO:

QUOTE

AMBASSADOR FRANK G. WISNER
EMBASSY OF THE UNITED STATES OF AMERICA
LUSAKA

YOUR EXCELLENCY

FURTHER TO MY LETTER MF/L&I/IN386 DATED 28TH AUGUST 1981, NOW THAT THE GOVERNMENT HAS RATIFIED PHASE I OF CHIRUNDU/KAFUE ROAD PROJECT, I WISH TO FORMALLY APPLY FOR A LOAN IN THE SUM OF US $12.2 MILLION TO FINANCE PHASE II OF THE PROJECT.
WITH BEST REGARDS.
YOURS FAITHFULLY,
KEBBY S K MUSOKOTWANE, MP
MINISTER OF FINANCE
CC DR L S CHIVUNO
DIRECTOR GENERAL
NATIONAL COMMISSION FOR DEVELOPMENT PLANNING
LUSAKA
UNQUOTE.
WISNER

BEST AVAILABLE DOCUMENT

ANNEX B
Exhibit 1

PROJECT AUTHORIZATION

Name of Country: Zambia

Name of Project: Southern Africa Regional Transport and Storage Development, Phase II

Number of Project: 690-0209

1. Pursuant to Section 531 of the Foreign Assistance Act of 1961, as amended, I hereby authorize the Southern Africa Regional Transport and Storage Development Project, Phase II, for Zambia ("Cooperating Country") involving planned obligations of not to exceed $13,100,000 in loan funds over a two year period from date of authorization, subject to the availability of funds in accordance with the A.I.D. OYB/allotment process, to help in financing foreign exchange and local currency costs for the project.

2. The project consists of the reconstruction and strengthening of approximately 52 kilometers of the Kafue-Chirundu road in Zambia. A.I.D. will assist by financing the costs of consulting engineering and construction services, construction commodities and other related goods and services.

3. The Project Agreement which may be negotiated and executed by the officer to whom such authority is delegated in accordance with A.I.D. Regulations and Delegations of Authority shall be subject to the following essential terms and covenants and major conditions, together with such other terms and conditions as A.I.D. may deem appropriate.

a. Interest Rate and Terms of Repayment

The Cooperating Country shall repay the loan to A.I.D. in U.S. Dollars within forty (40) years from the date of first disbursement of the loan, including a grace period of not to exceed ten (10) years. The Cooperating Country shall pay to A.I.D. in U.S. Dollars interest from the date of first disbursement of the loan at the rate of (a) two percent (2%) per annum during the first ten (10) years, and (b) three percent (3%) per annum thereafter, on the outstanding disbursed balance of the loan and on any due and unpaid interest accrued thereon.

b. Source and Origin of Goods and Services

Goods and services financed by A.I.D. under the project shall have their source and origin in the Cooperating Country or in countries included in A.I.D. Geographic Code 941, except as A.I.D. may otherwide agree in writing.

c. Conditions Precedent

The Loan Agreement shall contain conditions precedent which provide, in substance, as follows:

Prior to disbursement under the Loan, or to issuance by A.I.D. of documentation pursuant to which disbursement will be made for the project, the Cooperating Country will, except as the Parties may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D.:

(1) Evidence that the GRZ will finance all costs necessary to reseal and/or rehabilitate all sections of the road identified for resealing under Phase I which are not resealed under Phase I to a standard acceptable to A.I.D. and that such resealing and/or rehabiliation will be completed by December 31, 1982.

(2) A plan for the maintenance to be performed on the Chirundu-Kafue road, including both routine and periodic maintenance, as well as a designation of the operating entity within the Cooperating Country that will be assigned responsibility for such maintenance and evidence of an intent to provide funds sufficient to maintain the road in the future.

(3) (a) Final plans, specifications, tender documents, cost estimates and time schedules for carrying out the activity;

(b) A detailed plan as to the timing and manner in which the Cooperating Country's contribution will be made available to the construction activity;

(c) A description of the arrangements made for providing construction services for such activity; including an executed contract for construction services with a firm acceptable to A.I.D.; and

(d) A description of the arrangements made for providing engineering supervisory services for such construction activity; including an executed contract with a firm satisfactory to A.I.D., unless such services are being provided by agencies of the Cooperating Country.

d. Covenants

The Loan Agreement will include Covenants which provide, in substance, as follows:

(1) The Cooperating Country covenants that upon completion and acceptance of each section of the road, it will establish and carry out a regular maintenance program for that section.

(2) The Cooperating Country covenants that it will provide, on a timely basis, a project manager for this project.

(3) The Cooperating Country covenants that the two trucks provided for maintenance will be used solely on the Kafue/Chirindu road and will be adequately maintained and utilized for the purpose of such maintenance.

e. Waivers

Notwithstanding paragraph 3b. above, and based upon the justification contained in Annex B, Exhibit 4, of the Project Paper, I hereby:

(1) Approve a source/origin waiver from AID Geographic Code 941 to AID Geographic Code 935 to permit procurement of (a) construction equipment and commodities (approximate value $383,000) and (b) 2 trucks and spare parts (approximate value $117,000);

(2) Find that special circumstances exist justifying a waiver of the requirements of Section 636(i) of the Act with respect to the above-described vehicles; and

(3) Certify that exclusion of procurement of the above-described commodities from Free World countries other than the Cooperating Country and countries included in Code 941 would seriously impede attainment of U.S. foreign policy objectives and objectives of the foreign assistance program.

Date: _____

_____
M. Peter McPherson
Administrator

Clearances:
GC:JBolton _____ Date _____
AA/AFR:FSRuddy _____ Date _____
A/AA/PPC:LSmucker _____ Date _____

Drafted: GC/AFR:TMorkemy:9/16/81:29218

Annex B

Exhibit 2

611(e) Certification

Southern Africa Regional Transport and Storage Development - Phase II

I, John Patterson, the principal officer of the Agency for International Development in Zambia, having taken into account, among other factors, the uses which have been made of projects or programs in Zambia previously financed or assisted by the United States; the availability of financial and technical assistance from other donors, principally the World Bank (IBRD), to support the maintenance capability of the Roads Department of the Ministry of Works and Supply; and, the commitment of the Government of the Republic of Zambia to meet the support costs associated with this project, do hereby certify that in my judgment the Government of the Republic of Zambia has both the financial and human resource capability to effectively utilize and maintain the capital assistance activity to be carried out under this project.

John Patterson
AAO/Zambia

Date: 30 July, 1981

ANNEX B
Exhibit 3

PROJECT CHECKLIST

Listed below are statutory criteria applicable generally to projects with FAA funds and project criteria applicable to individual funding sources: Development Assistance (with a subcategory for criteria applicable only to loans); and Economic Support Fund.

A. GENERAL CRITERIA FOR PROJECT

1. Continuing Resolution Unnumbered; FAA Sec. 634A; Sec. 653(b). (a) Describe how authorizing and appropriations Committees of Senate and House have been or will be notified concerning the project; (b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than $1 million over that figure)?	Project described in CP on page 534. Congress notified by CN on. September 11, 1981.
2. FAA Sec. 611(a)(1). Prior to obligation in excess of $100,000, will there be (a) engineering, financial other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?	(a) Yes (b) Yes
3. FAA Sec. 611(a)(2). If further legislative action is required within receipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?	None Required
4. FAA Sec. 611(b); Continuing Resolution Sec. 501. If for water	N. A.

or water-related land resource construction, has project met the standards and criteria as set forth in the Principles and Standards for Planning Water and Related Land Resources, dated October 25, 1973?	
5. FAA Sec. 611(e). If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed $1 million, has Mission Director certified and Regional Assistant Administrator taken into consideration the country's capability effectively to maintain and utilize the project?	Yes. See Annex B, Exhibit 2
6. FAA Sec. 209.. Is Project susceptible of execution as part of regional or multilateral project? If so, why is project not so executed? Information and conclusion whether assistance will encourage regional development programs.	Project is being executed with regional monies as part of donor effort to improve transport within Southern Africa region. Other donors are funding other transport projects.
7. FAA Sec. 601(a). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; and (c) encourage development and use of cooperatives, and credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.	Project will assist with (a) by upgrading an important road link with Zimbabwe through which international trade flows. Project will have an unquantifiable but positive impact on items (b) and (e).
8. FAA Sec. 601(b). Information and conclusion on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).	Project will provide an opportunity for U.S. engineering and construction firms to compete for contracts.

9. FAA Sec. 612(b), 636(h); Continuing Resolution Sec. 508. Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized in lieu of dollars.	Zambia is contributing $4.6 million in cash and services towards the local cost of the construction contractor and overall project costs.
10. FAA Sec. 612(d). Does the U.S. own excess foreign currency of the country and, if so, what arrangements have been made for its release.	No
11. FAA Sec. 601(e). Will the project utilize competitive selection procedures for the awarding of contracts, except where applicable procurement rules allow otherwise?	Yes
12. Continuing Resolution Sec. 522. If assistance is for the production of any commodity for export, is the commodity likely to be in surplus on world markets at the time the resulting productive capacity becomes operative, and is such assistance likely to cause substantial injury to U.S. producers of the same, similar or competing commodity?	N. A.
B. FUNDING CRITERIA FOR PROJECT	
1. Development Assistance Project Criteria	N. A.
a. FAA Sec. 102(b), 111, 113, 281(a). Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production and the use of appropriate technology, spreading investment out from cities to small towns and rural areas, and insuring wide participation of the poor in the benefits of development on a sustained basis, using the appropriate U.S. institutions; (b) help develop cooperatives, especially by	

technical assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage democratic private and local governmental institutions; (c) support the self-help efforts of developing countries; (d) promote the participation of women in the national economies of developing countries and the improvement of women's status; and (e) utilize and encourage regional cooperation by developing countries.

b. FAA Sec. 103, 103A, 104, 105, 106, 107. Is assistance being made available (include only applicable paragraph which corresponds to source of funds used)? If more than one fund source is used for project, include relevant paragraph for each fund source. N. A.

(1) (103) for agriculture, rural development or nutrition: if so (a) extent to which activity is specifically designed to increase productivity and income of rural poor; 103A if for agricultural research, full account shall be taken of the needs of small farmers, and extensive use of field testing to adapt basic research to local conditions shall be made; (b) extent to which assistance is used in coordination with programs carried out under Sec. 104 to help improve nutrition of the people of developing countries through encouragement of increased production of crops with greater nutritional value, improvement of planning, research, and education with respect to nutrition, particularly with reference to improvement and expanded use of indigenously produced foodstuffs; and the undertaking of pilot or demonstration of programs explicitly addressing the problem of malnutrition of poor and vulnerable people; and (c) extent to which activity increases national food security by improving food policies and management and by N. A.

strengthening national food reserves, with particular concern for the needs of the poor, through measures encouraging domestic production, building national food reserves, expanding available storage facilities, reducing post harvest food losses, and improving food distribution.

(2) (104) for population planning under Sec. 104(b) or health under Sec. 104(c); if so, (i) extent to which activity emphasizes low-cost, integrated delivery systems for health, nutrition and family planning for the poorest people, with particular attention to the needs of mothers and young children, using paramedical and auxiliary medical personnel, clinics and health posts, commercial distribution systems and other modes of community research. N. A.

(4) (105) for education, public administration, or human resources development; if so, extent to which activity strengthens nonformal education, makes formal education more relevant, especially for rural families and urban poor, or strengthens management capability of institutions enabling the poor to participate in development; and (ii) extent to which assistance provides advanced education and training of people in developing countries in such disciplines as are required for planning and implementation of public and private development activities. N. A.

(5) (106; ISDCA of 1980, Sec. 304) for energy, private voluntary organizations, and selected development activities; if so, extent to which activity is: (i) (a) concerned with data collection and analysis, the training of skilled personnel, research on and development of suitable energy sources, and pilot projects to test new methods of N. A.

energy production; (b) facilitative of geological and geophysical survey work to locate potential oil, natural gas, and coal reserves; and (c) a co-operative program in energy production and conservation through research and development and use of small scale, decentralized, renewable energy sources for rural areas;

(ii) technical cooperation and development, especially with U. S. private and voluntary or regional and international development organizations;

(iii) research into, and evaluation of, economic development process and techniques;

(iv) reconstruction after natural or manmade disaster;

(v) for special development problems, and to enable proper utilization of earlier U.S. infrastructure, etc., assistance;

(vi) for programs of urban development, especially small labor-intensive enterprises, marketing systems, and financial or other institutions to help urban poor participate in economic and social development.

c. (107) is appropriate effort placed on use of appropriate technology? (relatively smaller, cost-saving, labor using technologies that are generally most appropriate for the small farms, small businesses, and small incomes of the poor.)

d. FAA Sec. 110(a). Will the recipient country provide at least 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or has the latter cost-sharing requirement been waived

N. A., but 26% of the cost of the project will be provided by Zambia.

for a "relatively least developed" country)?

e. FAA Sec. 110(b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing, or is the receipient country "relatively least developed"?

N.A., but assistance will be disbursed within three years.

f. FAA Sec. 281(b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civil education and training in skills required for effective participation in governmental processes essential to self-government.

N. A.

g. FAA Sec. 122(b). Does the activity give reasonable promise of contributing to the development of economic resources, or to the increase of productive capacities and self-sustaining economic growth?

N. A.

2. Development Assistance Project Criteria (Loans Only)

a. FAA Sec. 122(b). Information and conclusion on capacity of the country to repay the loan, at a reasonable rate of interest.

N. A.

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

N. A.

3. Project Criteria Solely for Economic Support Fund

a. FAA Sec. 531(a). Will this assistance promote economic or political stability? To the extent possible, does it reflect the policy directions of FAA Section 102?

(a) This project will help increase the economic stability of Zambia by improving its access to international trade routes.

(b) Regional development will be encouraged and stimulated through this project.

b. FAA Sec. 531(c). Will assistance under this chapter be used for military, or paramilitary activities?

No

Waiver Justification

Problem: The Southern Africa Regional Transport and Storage Development Project, Phase II will require the procurement of two right-hand drive Tippers (8-10 ton dump trucks), replacement parts and construction equipment. The Administrator is requested to authorize such procurement by granting a source/origin waiver from Geographic Code 000 (U.S. only) to Geographic Code 935 (Special Free World).

Facts:

(a)	Cooperating Country:	Zambia
(b)	Authorization Document:	Project Paper
(c)	Project:	Regional Transport and Storage, Phase II (690-0209)
(d)	Nature of Funding:	Loan
(e)	Source of Funding:	ESF
(f)	Description of Goods:	Two right-hand drive Tippers (8-10 ton dump trucks) replacement parts, construction equipment.
(g)	Approximate Value:	$500,000
(h)	Probable Source:	Republic of South Africa
(i)	Probable Origin	Republic of South Africa

Discussion:

A. Vehicles and Spare Parts: $117,000

In accordance with Handbook 1B, procurement of commodities from Code 941 sources and of Code 935 origin under an ESF loan-financed project requires a waiver. Under Handbook 1B, Chapter 5B4b (1) a waiver may be granted if "there is an emergency requirement for which non-AID funds are not available, and the requirement can be met in time only from supplies in a country not included in the authorized geographic code". You have the authority to determine that such circumstances exist and grant a waiver.

The two right-hand drive Tippers and spare parts to be procured are essential to the timely implementation of this project and to the road rehabilitation work to be carried out under this project. Procurement of the vehicles must take place prior to July, 1982 when implementation is scheduled to begin; however, since the trucks will be procured by the contractor and the contract will not be signed until May, 1982, U.S. vehicles cannot be procured within a 60-day period. These vehicles are not manufactured in Zambia or other nearby Code 941 countries. While they may be available from the more developed 941 countries, such as Korea or Brazil, they could not be procured on a timely basis since there are no established commercial channels for such commodities. In addition, there is no service compatibility in the area for vehicles of a 941 country origin. In addition to the vehicles, the contractor needs assurance that supplies of replacement parts, tires and other consumable items, required to repair and maintain this equipment, can be obtained in a timely manner when the equipment becomes disabled or damaged.

In addition to the general source/origin limitations on the procurement of commodities, Section 636(i) of the FAA prohibits the procurement of vehicles of non-U.S. manufacture. However, the provisions of Section 636(i) may be waived when special circumstances permit it. Under Handbook 1B, Chapter 4C2d(1)(b.), special circumstances are deemed to exist if there is a "present or projected lack of adequate service facilities and supply of spare parts for U.S. made vehicles". You have the authority to determine that such circumstances exist and grant a waiver.

Since, as discussed in the source/origin context, the necessary vehicles and spare parts cannot be obtained from U.S. or Code 941 manufacturers on a timely basis, and since it is important that trucks be standard equipment to the region for reasons of maintenance and replacement parts compatibility, the special circumstances criterion set forth above is satisfied.

B. Construction Equipment: $383,000

In accordance with AID Handbook 1B, procurement of commodities of Code 935 source and origin under an ESF loan-financed project requires a waiver. Any change in the authorized list of eligible countries or geographic code must be based upon one of the criteria found in Hanbook 1B, Chapter 5B4b. The need for this waiver is based on the following criteria: (1) there is an emergency requirement for which non-AID funds are not available and the requirements can be met in time only from suppliers in a country not included in the authorized geographic code; (2) the commodities are not available from countries included in the authorized geographic code. You have the authority to determine that such circumstances exist and grant a waiver.

From our experience in the past, we know that the construction contractor will have its own equipment, most likely of non-U.S. origin, and replacement parts will be required periodically for this equipment. We estimate the cost of the replacement parts to be $383,000. It is unlikely that these equipment items will be available from Code 941 countries and even if they were, they could not be procured on a timely basis because of the absence of established commercial channels. The long lead time from Code 000 sources would seriously impede the successful implementation of this project.

ANNEX C

LOGICAL FRAMEWORK - ZIM-ZAM ROAD

OBJECTIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
U.S. Objective: To support pragmatic solutions to regional problems of Southern African States	1. Key regional economic problems being addressed on a cooperative basis.	1. SADCC and technical working groups' minutes	1. Southern African countries ("nine") continue to work together on regional economic problems and seek U.S. assistance.
	2. AID funding for regional projects to be at or above U.S. $20 million per annum.	2. Field Reports (State and AID).	2. Regional programs continue to receive U.S. Administration and congressional support.
	3. Number of regional projects equals or exceeds number in 1980.	3. AID budget and CP documents.	
		4. Specific local government documents, budgets.	
Project Goal: Enhance the economic development and improve welfare of the general population in Zambia and Zimbabwe.	Measures of Goal Achievements: 1. Economic developments is enhanced by the improvement of the Zim-Zam Roads' transport capacity.	Verification: 1.Annual GRZ statistical reports; types and amounts of cargo transported over Zim-Zam road.	Assumptions: 1. General economic/political climate does not deteriorate.
	2.Price of Zambia's food and other goods not increased through higher transport costs; establishment of free flow of goods on the road.	2. GRZ published reports on food/commodity prices and freight rates.	2. Goods transported over this road will be for developmental and BHN requirements, not for luxury goods.
	3. Increase of road usage and less pressure on more costly alternative transport routes.	3. Traffic counts on road usage (Department of Roads).	

Project Purpose: To facilitate the exchange of food and industrial/ commercial/consumer goods between the two nations and with other countries in the region by improving the Zim-Zam road link.	End of Project Status: 1. Year-round, reliable access for trucks with cargoes of food and industrial/commercial/consumer goods on this road. 2. Exports and imports to/from Zambia and Zimbabwe not hindered by the condition of the road.	Verification: 1. Broader customs documentation at both frontiers. 2. Agricultural marketing authority reports, Ministry of Works and Supply reports, AID project manager visits.	Assumptions: 1. Terms of trade between Zimbabwe and Zambia continue to favour exchange of goods. 2. All sections of the Zim-Zam road are properly maintained. 3. Road transport over this route continues to be competitive and efficient.
Project Outputs: Rehabilitation of 52 kilometers of road between Chirundu and Kafue in Zambia.	Magnitude of Outputs: 1. 39 kms. of the road undergo complete reconstruction. 2. 13 kms. of the road undergo pavement strengthening. 3. Roads Department soils laboratory carried out all soils/ pavement sampling and analysis. 4. Roads Department utilizing two contractor-provided vehicles for road maintenance.	Verification: 1. Project manager's monthly reports. 2. Contractor's reports 3. GRZ reports (Dept. of Roads) 4. Payment vouchers/ certificates. 5. Site inspections.	Assumptions: 1. Qualified contractor(s) and engineering consultant can be engaged. 2. GRZ provides adequate financial support for the construction and continuing maintenance of the road. 3. Phase I (resealing) is completed on schedule (12/81).
Project Inputs: 1. AID provides $13.1 million for construction consulting engineers and certain equipment.	Implementation Targets: 1. Contract let 5/1/81 for the construction of the road and work starts 7/1/82.	Verification: 1. Project manager's monthly reports.	Assumptions: 1. Funding is made available by AID/Washington and GRZ.

2. GRZ provides $4.6 million in local currency for construction and provides ministerial support.	2. Consulting engineer contract let by 4/1/82.	2. Contract documents	2. AID/Zambia has staff to monitor project.
	3. Contractor procures soils lab equipment during mobilization period and delivers two trucks to Roads Dept. after 12/82.	3. Payment vouchers/ certificates.	3. Selection of consulting engineer, and contractor done on a timely basis.
	4. All work completed by end of 1983.	4. GRZ reports and certificates.	4. Contractors are able to comply with terms of contracts and do so within the time-frame allowed.
		5. Site inspections.	5. There are no overly unusual factors which will increase costs beyond 20 percent set aside for contingency.

UNITED STATES GOVERNMENT

memorandum

DATE: June 23, 1981

REPLY TO ATTN OF: John Hewett, AID Consultant Engineer, FHWA. John Hewett

SUBJECT: REGIONAL TRANSPORT DEVELOPMENT (690-0209)

TO: John A Patterson, AID Representative

ANNEX D
Exhibit 1

The attached report is submitted in accordance with DOT/AID RSSA Agreement dated November 1980, to satisfy the conditions called for in the PID, Salisbury-Lusaka Regional Road, for the assessment by a Highway Engineer of the capability of the Roads Department of the Ministry of Works and Supply of the Government of the Republic of Zambia (GRZ), to perform the necessary engineering for the design and construction of the Salisbury-Lusaka Road.

After a review of the engineering capabilities of the Roads Department, it is my opinion that:

i. GRZ should do the design work and prepare the contract documents;

ii. GRZ should contract for construction supervision services, and perform all necessary construction testing for the consultant;

iii. GRZ should contract for construction services.

Foreign Projects

	Int.	Date
DIVCH	✓	
DEPAA	✓	7/7
DEPWH	✓	
TRANS		
ADM		
TRAVEL		
SEC	BRB	7/6/81
CT		
FILE		

RECEIVED
JUL 7 1981
FOREIGN PROJECTS DIVISION

Attachment

Extent copy to M. Bracola 7/6/81 BRB

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

REPORT ON THE ENGINEERING REQUIREMENTS FOR THE KAFUE-CHIRUNDU ROAD

Road History and Condition

No project records of initial construction or maintenance records of work done are available. Roads Deparment personnel believe the road to be about twenty years old. The pavement section is 150 mm of cement stabilized gravel base over 150 mm of unstabilized gravel sub-base with a double bituminous chip seal surfacing. There is visual evidence that considerable repair work has been done in some areas, possibly altering this section.

Benkleman bean deflections were made at .2 kilometer intervals in each wheel path in May 1980 on seventy kilometers of the road, and a visual condition survey was done in November 1980. The condition survey report states that no work was done on the road since 1964. Benkleman beam deflections indicate a strong pavement with deflections within acceptable limits, as established by the State of California for this type of pavement, for most of the road.

Another visual condition survey was done in February 1981 with corrective measures proposed.

There are many potholes throughout the road varying in size to as large as two meter.

Roads Department and on site maintenance personnel advise most of these potholes developed during and following the last rains. The pavement appears sound between the potholes and Benkleman beam readings generally bear this out.

Some areas are badly cracked with transverse and longitudinal cracks and some alligator cracks.

There is evidence that water overflowed the road in a few places, eroding the downstream embankment and washing out some pipes.

Most shoulder gravel is lost and there is resultant edge ravelling of the pavement and some edge failure.

Hairline cracks are evident over most of the pavement.

There is some slippage of embankment in three areas that may require small retaining walls and/or special drainage considerations.

Maintenance forces are now patching potholes by hand.

Proposed Reconstruction

The Roads Department proposes this year to place a surface chip seal surfacing on approximately thirty-three kilometers of road, after repairing potholes, of pavement that is essentially sound. Sections with extensive damage from potholes will be reconstructed by removing and discarding the surfacing, ripping up and recompacting the present base and adding a new cement treated base and surface treatment.

Sections which are essentially sound but have high Benkleman beam deflections or a rough riding surface will be overlaid with 50 mm of asphalt concrete.

Pavement Design

The pavement design procedure contained in the AASHTO Interim Guide for Design of Pavement Structure, 1972 is the method used by the Federal Highway Administration to approve pavements for federal aid participation in the United States. It is the procedure used by most States. Its use is limited to pavements with a minimum asphalt concrete surfacing of two inches and is, therefore, not applicable to this road.

The Zambian Department of Roads has adopted a procedure developed by the British Road Research Laboratory contained in RRL 1962 Road Note 31-a, Guide to The Structural Design of Bituminous Surfaced Roads in Tropical and Sub-Tropical Countries. This design procedure allows the determination of a pavement section based on the number of trucks using the road each day and the sub-grade strength. I believe this method to be satisfactory for this type of road with these traffic volumes. A procedure taking better account of the number of repetitions and weight of axles such as developed by the British Road Research Laboratory or the AASHTO Interim Guideshould be used, however, for higher type roads with higher traffic volumes.

The Zambian Department of Roads reports good performance with cement treated gravel based roads with chip seal. The Lusaka-Chirundu Road is reported to have been in service approximately twenty years with no sign of serious structural failures. On a visit to the road I observed no signs of serious structural deficiencies and only one section with transverse shrinkage cracks normally expected on cement treated roads. The lack of shrinkage cracks is apparently due to a low cement content and the gravel used. The fact that the road has been in service for twenty years without serious structural distress is an indication that the design is adequate. While the road carried no traffic for approximately seven years, 1973 through 1979, traffic figures reported in the Project Identification Document for Zimbabwe at the border indicate truck traffic during 1970 to 1973 was at the same level as this year. No data is reported for previous years. The road is assumed therefore to have carried approximately 13 years of truck traffic.

During the seven years with virtually no traffic or maintenance the thin asphalt surfacing would be expected to deteriorate from exposure to sunlight and oxygen. The lack of traffic, which is generally believed to have a kneading effect which tends to keep the asphalt pliable, would contribute to the deterioration. These factors plus

the fact that the pavement had apparently not been sealed for a number of years prior to the closing of the road resulted in a surface that was excessively brittle that cracked readily under traffic.

Traffic Loading

There is no long term traffic count or axle weight data for this section of the road on which to base an estimate of numbers of axle load repetitions. The Kafue turn-off is the western limit of this project. Chirundu is the eastern limit at the border with Zimbabwe.

A one week traffic count carried out during the week of June 1, 1981 at the Kafue turn-off, gave the following results for average daily traffic (ADT):

Cars and buses	: 375
Two axle trucks	: 13
Single unit trucks, more than two axles	: 131
Multiple unit trucks	: 23
Total ADT	= 542 % Trucks = 31%

The customs station at Chirundu reported the following number of vehicles crossing the border for the indicated months. ADT shown was calculated:

	Cars & Buses	Commercial Vehicles	ADT(Trucks)
February	509	450	15
March	773	575	19
April	1293	1551	52
May	890	1801	58
June 1 - 5	133	347	69

The total number of trucks for June 1 - 5 reported at Chirundu were counted during the same time period as the one week count at the Kafue turn-off. Corresponding ADT's for June 1-5 for trucks are 69 at Chirundu and 167 at Kafue turn-off. Of the 167 trucks counted at Chirundu, 23 were multiple unit which would probably be through traffic, Zimbabwe to Kafue, and beyond. The remaining are single unit trucks. Ninety-eight of the 167 counted at Chirundu originate, or are destined for points between the Kafue turn-off and Chirundu.

There is no axle weight data for this road, or any other road, in the country where maize is hauled. There is no information in the Department of Roads on the type of commodities being hauled on the road. It is known that a considerable amount of maize has been, and is being hauled because of a shortage in Zambia, but the proportion of trucks that are hauling maize, or the amount that is projected

to be hauled in the future, is not known.

A small amount of data reported from weight stations in other parts of the country was reviewed without regard to commodity type. Only loaded trucks towing trailers were weighed. The data indicated that load carrying single axles were grossly overloaded, average about fifteen metric tons vs. a ten ton legal limit. Tandem axles were loaded to slightly under the legal limit, thirteen to fourteen tons vs. the legal limit of sixteen and thirty-three one hundredths (16.33) tons. Six of the twenty-five trucks in the sample examined represented trucks with overweight single loaded axles.

For pavement design purposes the damage done by a truck is stated as the damage that would be done by a number of standard 18,000 pound axles, expressed as number of 18 kip equivalent axles. The average truck and trailer of this type with a rear single axle would represent twelve 18 kip equivalent axles. The average truck and trailer with tandem rear truck axle would represent 2.3 18 kip equivalent axles. Since the trucks with the overloaded axles represent 24% of the total truck stream, the number of equivalent 18 kip axles for average multiple unit truck would be:

24 x 12 + .76 x 2.3 = 2.9 + [illegible] = [illegible]. Although the overloads make up only 24% of this type of truck, they have the effect of doubling the damage done.

Since it is reported that all trucks entering Zambia are weighed on the Zimbabwe side that weight limits are strictly enforced and their weight limit is more restricted than Zambia's, it will be assumed that all trucks are loaded to the legal limit. This gives an 18 kip equivalency of 2.8 per truck.

The number of single unit trucks crossing the border, based on the June 1-5 count, assuming all multiple units counted at Kafue turn-off continued across the border, was 46, or 28%. There is no axle weight data on single unit trucks. If it is assumed axles on these vehicles are loaded in the same manner as axles on the multiple units previously discussed, the equivalent 18 kip axle loading would be .9 per truck. Assuming all trucks are loaded to the legal limit, the 18 kip equivalent per truck would be 2. This figure will be used. The remainder of single unit trucks counted at Kafue turn-off that did not cross the border, based on the June 1-5 count, was 96 or 58%. Since these trucks are destined to, or originate at, points within the project, they probably carry relatively light loads and about one-half may be empty. An assumption of one 18 kip equivalent per truck seems reasonable.

	Multiple Units	Single Unit Crossing Border	Single Unit Not Crossing Border
% of Truck Traffic	14	28	58
18 Kip equivalent per truck	2.8	2	1

The equivalent 18 Kip rate for average trucks would be:

.14 x 2.8 + .28 x 2.0 + .58 x 1 = 1.5.

Truck counts for the months of February to June 5, reported at the border crossing at Chirundu, show a seasonal trend. This trend is confirmed by the Planning Section. They report heavy truck traffic in June and July and very little November to February. If the data reported for these months is assumed to be representative, the ADT truck traffic for the year would be 59% of the June 1-5 truck ADT.

Since the average daily traffic at Kafue turn-off for June 1-5 was 167, the ADT for trucks for the year would be:

.59 x 167 = 99. Say 100. As this is two-way traffic and pavement is designed based on actual loads applied, one directional traffic is used.

One directional truck ADT = $\frac{100}{2}$ = 50

The Roads Department uses a ten year design period. Assuming traffic will double in ten years, the truck ADT for the ten year period would be roughly: $\frac{50 + 100}{2}$ = 75 ADT.

A rough estimate of the total number of trucks for the ten year period would be the ten year ADT time the number of days in ten years:

75 x 365 x 10 = 273,750 trucks.

The number of 18 kip equivalents that would occur during the ten year period would be the number of trucks times the 18 kip rate per truck:

273,750 x 1.5 = 410,625 (18 kip/10 years)

Because the majority of loads occur during the dry season when the pavement is in its strongest condition, the damaging effect of loads would be reduced which would reduce the number of 18 kip equivalents below those calculated.

The above analysis is based on a large number of assumptions made necessary by a lack of traffic and axle load data. The assumptions made were deliberately conservative, resulting in an estimate considerably on the high side.

Sections to be Overlaid

Benkleman beam deflections normaly require temperature and season corrections. The Road Department did their testing in the morning and afternoon reducing the temperature variation. In addition temperature would have little

influence on a cement treated base as opposed to a pavement whose structure consisted of a substantial amount of asphalt materials. All readings were taken in theseason immediately following the rains, when the pavement would be expected to be in its weakest condition. This would eliminate the need for seasonal correction. No corrections for temperature or season are therefore believed necessary.

Benkleman beam data has been analyzed by the Roads Department on the assumption that the road, in general, is structurally adequate as indicated by performance and observation, therefore, only those locations with deflections significantly higher than average should be considered weak and in need of strenghtening. This is logical, but the method that is accepted as the present state of the art by most pavement design engineers, is to base the analysis on a limiting deflection developed for a given pavement type and traffic loading. California has developed a procedure applicable to a pavement with six inches of cement treated base, such as this road. This procedure is reported in AASHTO Interim Guide for Design of Pavement Structure, 1972. For the number of 18 kip equivalent axles estimated for this road the limiting deflection allowed by this procedure would be about fourteen

thousands of an inch for the eighty per centile deflection. A two inch overlay is assumed to reduce the deflection by 30% using this procedure. Areas with deflections that exceed the allowable limit have generally been designated for overlay with two inches of asphalt concrete. A reduction of 30% of these deflection values will reduce them to the acceptable level. The areas proposed for overlay should, therefore, be adequately designed.

Sections to be Reconstructed

The areas to be reconstructed are badly potholed with many patched areas where potholes have been repaired by maintenance forces. An attempt will be made to repair as many potholes as possible prior to the rainy season, beginning in November.

Potholes are repaired by squaring up the sides of the distressed area, cutting the sides vertically to the depth of loose material, removing all loose materials, then compacting new cement treated gravel into the hole with a mechanical tamper. The surface is then covered with asphalt concrete, after adequate cure. The procedure results in a good strong patch, except the materials section reports that good density is not obtained at the edges. The undamaged pavement between the potholes and patches appears sound and

generally exhibits acceptable Benkleman beam readings indicating it has sufficient strength. The potholes apparently develop as a result of the loss of surface protection when the surface becomes brittle and cracked, causing disintegration and loss of surfacing material. Water which enters the surface cracks and areas of exposed base weakens the surface of the base and traffic causes rapid deterioration. The potholes appear, therefore, to be the result of surface deterioration resulting from a lack of maintenance, rather than structural weakness of the pavement.

The proposed method of reconstruction is to rip up the old base, recompact it and add a new cement stabilized gravel base and surfacing. This will result in a pavement section approximately 150 mm thicker than the original section. Since the original pavement section proved adequate under many years of service this stronger section appears to be a good design.

Section To Be Chip Sealed This Year

The areas proposed to be chip sealed this year have relatively few potholes and patches and Benkleman beam deflections are geneally adequate. Numerous small cracks are developing indicating the need for resurfacing prior

to the rainy season if extensive damage is to be prevented. It can be expected that some small local failures will develop in these sections, but the urgent need to protect the existing structure during the coming rainy season justifies immediate action.

Consideration of Higher Type Pavement

The areas to be reconstructed and the areas to receive only a chip seal will result in a pavement section with a surfacing of only a chip seal. This pavement type has reportedly given good performance in the past and can be expected to perform well on this project. This type of surfacing however, requires constant attention by maintenance forces to identify and repair local points of distress to prevent further deterioration. According to the maintenance section, these surfaces require re-sealing every five years. Placement of a 50 mm asphalt concrete mat on sections to be reconstructed would result in a considerable upgrading of the pavement with much less pavement maintenance requirements and better riding qualities over the life of the pavement. This would protect the investment in these sections. While initial cost would be considerably higher, reduced maintenance and improved riding quality may make it cost effective. This proposal would appear especially

logical if a program were instituted to upgrade the remainder of the road from Kafue to Lusaka to the same standard. This would be justified if the road were given a high enough priority or a large increase in traffic were projected for this route.

Location of Planned Resurfacing, Reconstruction and Overlay

A schedule indicating the location of road proposed to receive the different treatments is attached. This estimate is based on the most recent review of the road. The limits of the various proposed treatments could be changed as a result of the projected testing.

A complete condition survey is to be done again in mid-February following the worst rains. The results of this survey could substantially alter this plan.

PREPARATION OF CONTRACT DOCUMENTS - STAFFING

Materials Section

Testing of In Place Pavement and Gravel Pits for Design

The materials section will be responsible for materials testing of the inplace road for purposes of confirming design assumptions, and for testing of gravel pits for base materials.

The kinds of tests that will be run on the in-place pavement are density of base and sub-base in areas to be overlaid, density of sub-base and sub-grade in areas to be reconstructed, gradation, plasticity index and CBR of sub-grade and sub-base. Pits will be dug in the pavement to observe the integrity of the pavement and condition of the sub-grade. Areas of high Benkleman beam readings in areas with extensive damage will be given special attention. The purpose of the testing is to determine pavement conditions that contribute to high deflections, to ensure that sub-base and sub-grade are in suitable condition to support the overlying pavement and that the base material, when recrushed and compacted, will be suitable as a sub-base material in areas to be reconstructed, to confirm the integrity of pavement to be overlaid and to confirm the assumed cross-section.

A large number of tests will not be required. Locations with high Benkleman beam deflections and areas of extensive damage will receive the most attention, while a few spot checks in other areas will be sufficient. Design should not be substantially affected by the results of these tests.

Benkleman beam deflections are a measure of the structural capacity of the pavement, so material testing is for the purpose of confirming assumptions of material properties, rather than determining structural adequacy.

It is anticipated that two pits will be dug per kilometer where there is especially extensive damage or high deflection. In other areas a testing frequency of one test per kilometer is anticipated.

It is not critical, nor should it be intended that all areas of possible weakness be identified. Any unidentified local areas of weakness will show up in construction during compaction in the reconstruction portions. There should be a provision in the contract for the project engineer to direct the contractor to correct any such locations. CBR, graduation and shrinkage tests will be done on gravel to be used for base material.

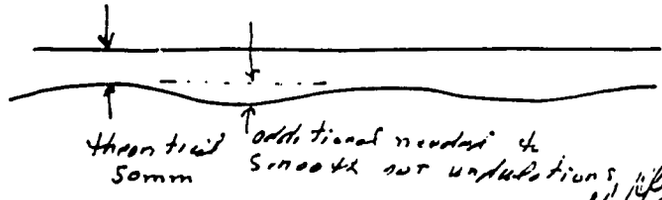
The materials section is well staffed to carry out the amount of testing required for design purposes.

The materials section is headed by a road engineer with extensive material experience. There are four senior material technicians who have received training in the United Kingdom in material testing and who have had extensive experience in material testing. An additional five materials technicians have had extensive experience in materials testing. There are twenty laborers assigned to the laboratory, also with long experience working for the material laboratory.

The materials laboratory staff is able to devote most of its time to this project since necessary laboratory work is being done by consultants and contractors on other on-going projects. Equipment necessary to perform the indicated tests, (sieve analysis, plasticity index, CBR and density) is on hand, and in operating condition. Additional sieves and density testing equipment will need to be procured since they are often damaged during testing.

Development of Quantities, Pay Items, Description of Work, Specifications, and Estimate

The materials laboratory is responsible for the development of quantities, pay items, description of work, specifications, and estimate. Development of quantities is straightforward since in the case of overlay, a constant amount will be added per length of road and in the



P. 19

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design will be primarily limited to drafting. A few drawings may be required for head walls and retaining walls.

Staffing of the section has been drastically curtailed in recent years with design work being done by consultants. The engineer in charge of the section is the only man capable of geometric design. This project, however, will require no geometric design, or at most some minor widening of curves. Any design required, because of minor widening, could easily be done by this man.

Three draftsmen are on the staff, and would easily be able to handle the small amount of work required for this project.

Three surveyors are on the staff. They could do any necessary cross-sections to determine embankment quantities or drainage location and elevation. If any of this type of work is required it will be in the small areas where embankment has been washed out by over flowing water.

The planning and design section will easily be able to handle the small amount of work required for this project since design is done by consultants on all other on-going projects.

Contracts Section

The contracts section is responsible for assembly of contract documents, advertisements for bids, review of bids, recommendation for award, and administration of consultant contracts. The section is staffed with an engineer and two assistants. Assembly of documents if fairly routine, once the plans and specifications are prepared and agreement is reached with AID on the terms of the contract. The engineer in charge of the section is experienced in review of bids for reasonableness or unbalancing. In administering consultant contracts for construction supervision, progress payments are reviewed, payments to contractors are processed, consultant practices are reviewed, and monthly meetings between the consultants and contractors are attended. Assistance is received from engineers assigned to other sections if the need arises.

Summary of Capabilities

In summary I believe the Roads Department staff is well capable of preparation of the plans, specifications, and estimates, issuance of, receipt, and evaluation of tenders, and recommendation of award and negotiation of construction contracts for both the first and second phase projects.

The Roads Department should be able to complete preparation of the contract documents by November 1981. This

will allow construction to begin substantially earlier than if the design were done by consultant. Reconstruction and overlay should begin at the earliest possible date in order to preclude further damage during the 1982-1983 rainy season. The time required for all steps between preparation of contract documents and award of contract should be reduced as much as possible. Consideration should be given to on-going review by AID during preparation of contract documents and prequalification of bidders before design is complete. The time for bid period, review and award, and negotiation of the construction contract should be held to the absolute minimum.

The Department of Roads has been hampered by a lack of availability of vehicles for transporting personnel and a lack of fuel. It is essential that sufficient vehicles and fuel be made available for proper testing and other essential travel if the project is to progress as anticipated.

Supervision of Construction

The Roads Department has no staff provision for the supervision of construction. This work would have to be done by a consultant. The materials section is, however, capable of performing all construction testing for the project. Under this arrangement the materials section performs testing as requested by the consultant and reports to the consultant.

The kind of tests that would be required are density tests of base and sub-base, graduation and plasticity index of new base material, asphalt content of asphalt concrete mix, Marshall stability and flow for mix design of asphalt concrete, temperature of asphalt concrete at the plant and delivered on the road and moisture content of base and sub-base materials. Equipment to conduct these tests is on hand but is inadequate to complete this project. Additional asphalt extraction equipment and sieves are especially needed. This and other equipment needed to properly equip the laboratory are listed on attachment 2.

Consultant staffing required for the project is estimated to be one resident engineer, two assistant resident engieers with the capability for materials and surveying, and three technician inspectors.

The consultant will need the necessary equipment to take cross-sections for quantities, to establish culvert grades, and to establish line for the lay down operation. This will require appropriate surveying equipment (level, staff, chain and transit).

The contract will have a pay item for the provision of necessary transportation and housing for the consultant staff.

Maintenance

Equipment

Equipment needs to perform the necessary maintenance within each province, based on the length of roads and type, have been developed by the maintenance section. The equipment now on hand in operating condition is only a small fraction of that needed. There is only one grader in operating condition between the three maintenance zones that have responsibility for maintenance of this road. There is difficulty obtaining transportation for the laborers to the site for pothole repair. As a result of the almost complete lack of equipment the roads are deteriorating rapidly and the length of roads requiring heavy maintenance or reconstruction is becoming very large. If the necessary equipment were made available immediately, a number of years would be required to catch up on the back-log of work to be done.

It is unreasonable to expect this project to receive proper maintenance, while other roads have a much higher need. The entire maintenance organization must be adequately equipped, if proper maintenance of the project is to be expected.

Training

Recognizing there is a great need for training of maintenance personnel the maintenance section has established a training center. It has, however, been ineffective because of the inability to hire qualified instructors and the lack of attendance by maintenance personnel. There appears to be

a need for compulsory training.

World Bank Study

The World Bank, in a study reported in Report No. 1729b - ZA, April 17, 1978, developed equipment and training needs for maintenance forces in connection with a proposed loan. This loan was to develop a maintenance capability because maintenance commitments for two roads previously constructed with World Bank loans had not been met. The loan was withheld because of the failure to obtain the staff established by the World Bank as a condition of the loan. Recent recruitment has resulted in the hiring of the necessary staff and the loan has now been committed. However, the amount of the loan will be held to the amount established in the 1978 report and the effects of inflation will reduce the amount of equipment obtained. Since the time of the World Bank study, the situation has worsened considerably with respect to inoperative equipment and back-log of maintenance to be performed.

A consultant study with recommendations for re-organization of the Mechanical Service Branch, which is responsible for procurement and repair of equipment, was financed by the World Bank and recommendations have been submitted by the consultant.

In my opinion there would be no benefit in additional study. Equipment requirements and training needs are well known from the World Bank study and the review by the

Maintenance section. The maintenance which is required is well understood. The only reasonable possibility that presents itself at this time for a maintenance organization capable of performing adequate maintenance is the implementation of the program established by the World Bank.

Housing for Consultant and Contractor Personnel

There is a shortage of housing in Lusaka and no adequate housing exists between Lusaka and the end of the project.

As previously mentioned, the contract will specify the provision of housing for the consultant by the contractor.

Quarry at Kafue

A quarry is being developed by the Roads Department near Kafue. The deposit which will be worked by this quarry was used in the past and is reported to produce excellent material. The deposit is estimated to be one and one half by fifteen km in area and so has the potential for a very large amount of aggregate. The use of aggregate from this quarry would result in considerable saving in aggregate cost for hot mix on this project. The aggregate produced would also be very beneficial to the Roads Department for future construction and maintenance contracts.

Aggregate used in the recent airport project was hauled 500 km from the copperbelt region. While aggregate

is now reported to be available in the Lusaka area that could be used in asphalt concrete or in a chip seal it is not as high quality as that which would be produced from the Kafue quarry. Gneist aggregate, as would be produced by the Kafue quarry would be expected to be superior in skid resistance properties to that from either Lusaka or the copperbelt which are both limestones.

There is now on hand a crusher and drill. A loader is to be furnished by the Finnish Government. The Roads Department believes they can obtain the necessary funds for all other needs to make the quarry operational except for two or three heavy duty rock haulers. I believe AID should investigate the feasibility of financing the purchase of these units.

JOHN HEWETT
AID CONSULTANT ENGINEER
FHWA

Attachment 1

Schedule of Proposed Work -
Repair and Surfacing to be done 1981 -
Reconstruction and Repair and Overlay to be done 1982-83

Km Post (Km 0 = Chirundu) (Km 82 = Kafue)	Type of Work	Length
0 - 3	Surfacing	3
3 - 5	Overlay	2
5 - 9	Surfacing	4
9 -13	Reconstruction	4
13-18	Surfacing	5
18-33	Reconstruction	15
33-37	Overlay	4
37-39	Reconstruction	2
39-61	Surfacing	22
61-67	Reconstruction	6
67-72	Overlay	5
72-76	Reconstruction	4
76-82	Overlay	6

Additional condition survey is to be made mid February to confirm or adjust these limits.

Summary: Estimated total length - Chip seal surface 34Km
Repair and Overlay 17Km
Reconstruct 31Km

ANNEX D

EXHIBIT 2

ENGINEERING ANALYSIS

REPAIR PROCEDURES

These procedures have been developed by the Roads Department of the Ministry of Works and Supply and reviewed by the PP Team Engineer for adequacy. The procedures are found to be acceptable.

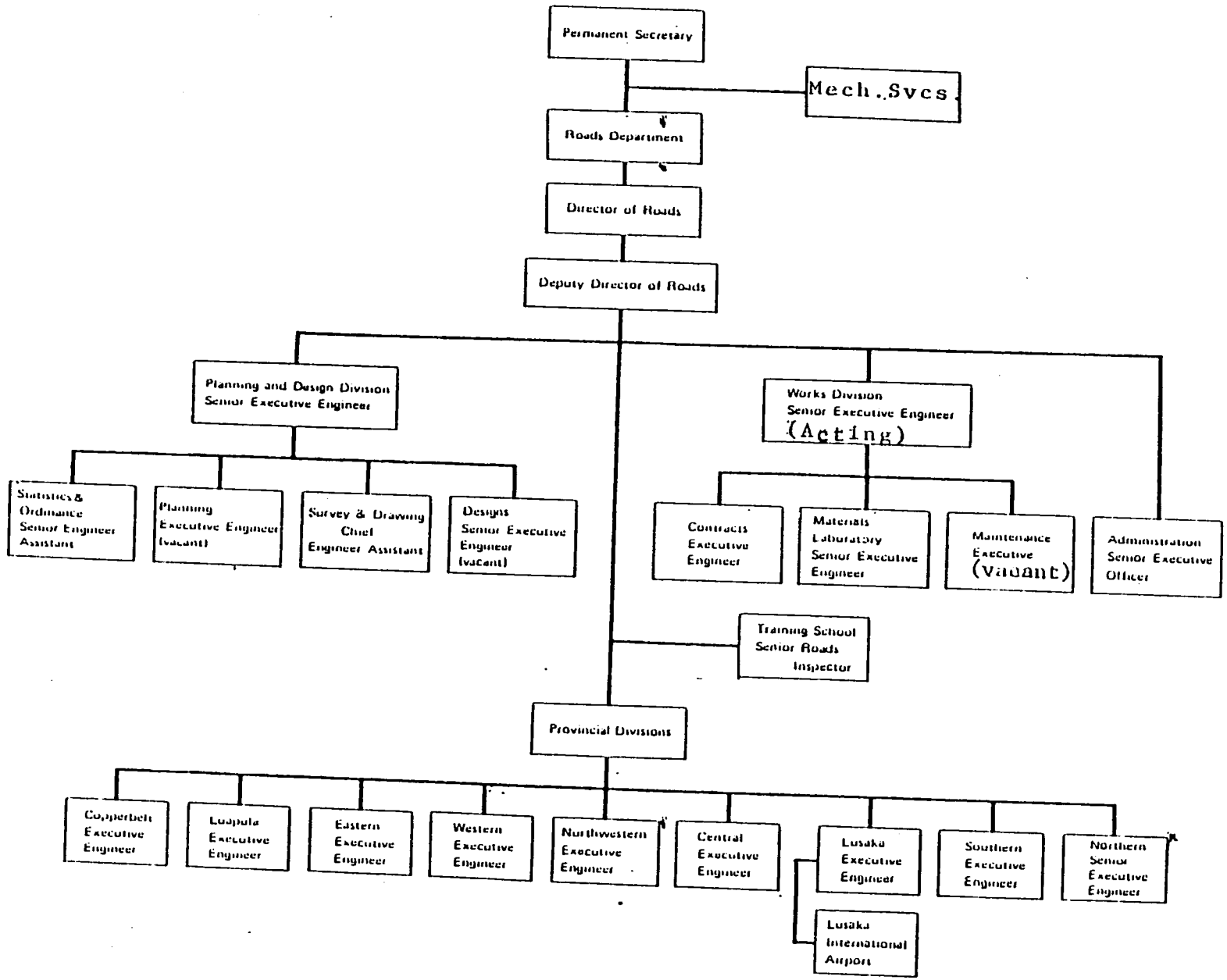
A. Pavement Strengthening will be applied to sections of the road which are essentially sound and do not have serious structural damage. All potholes and weak areas will be cut out square and excavated to sound base material and then filled and compacted with a layer of stabilized gravel and course bituminous premix. They will be surfaced with a fine bituminous premix 25mm thick. Damaged edges will be repaired as above to re-establish the 6.7 meter road width. Existing shoulders will be re-graveled to original design level. Drainage channels, culverts and outfalls will be cleared and repaired. Damaged or missing drainage control curbs will be reconstructed. A regulating course of bituminous concrete premix will be applied to the existing surface to fill in depressions and undulations. The entire road surface will then be overlaid with 40mm of bituminous concrete premix to the full 6.7 meter width of the road. Finally, to control erosion on high, banked curves, a bituminous spray and chip surface treatment will be applied to the shoulders.

B. Reconstruction of the road will be required on those sections which have been damaged to the point that strengthening of the pavement would not be effective. The existing surface will be ripped up and disposed of in waste areas along the road. The existing base course will be ripped up and recompacted as a new sub-base for the road. New gravel (150mm) will be added and compacted to the roadway and shoulders as a new base course. This material will be stabilized with portland cement. In sections over 1 kilometer in length the pavement width will be widened from the existing 6.7 meter width to 7.3 meters. A pavement sufacing will then be applied, consisting of two layers of bituminous material. Side drains will be re-shaped to the required section and other drainage structures cleaned and repaired. Some culverts will be replaced with larger pipes to adequately handle the flows.

C. Parking areas and lay-bys will be improved to provide safe, all weather stopping points for large trucks. The existing lay-bys along the road will be improved and the parking area near the Chirundu Border Post will be enlarged to allow parking for vehicles being processed for border crossing. These stopping areas will be built with an adequately compacted base to support heavy trucks in the wet season. No bituminous surfacing will be applied.

ANNEX D
EXHIBIT 3

Organization of Roads Department
(Ministry of Works and Supply)



Annex D

Exhibit 4

Project Site: Physical Characteristics

Geology and topography

Kafue town is situated at the margin of the Kafue Flats, which consist of alluvium. Hills to the east of the town are of Muva schists and quartzites. In the escarpment region the road traverses quartzites and slates of the Katanga-Kundelungu System (mostly to the SW) and paragneisses of the Basement Complex (mostly on the NE side of the road). Off the road on either side are intrusive deposits of granite. All of these rocks probably date back to Palaeozoic times. The valley floor, and the section on the road from the Kafue bridge to the top of the escarpment lie on sandstones and basalt of the Karroo System (Hermo-Triassic).

For the first 30km, starting from Kafue, the road runs along the foot of hills. To the right of the road the ground is flat, this being the lower end of the Kafue Flats. A few kilometers beyond the bridge, after the turnoff the Kafue Gorge dam, the road follows the valley of a small river. At first this valley is flat and wide, but it becomes narrow and more deeply disseccted as it approaches the escarpment. This stream (Kesya) later crosses the road to join the Kafue. After crossing the Kesya the terrain becomes increasingly broken and the road winds its way down the escarpment. The final 20km of the road traverses the Zambezi Valley from the foot of the escarpment to Chirundu on the river. The valley floor is not flat; there are hills of various sizes, and it is dissected by numerous streams and rivers. Alluvial terraces border the main rivers (Zambezi, Kafue and Lusito).

Soils and Vegetation

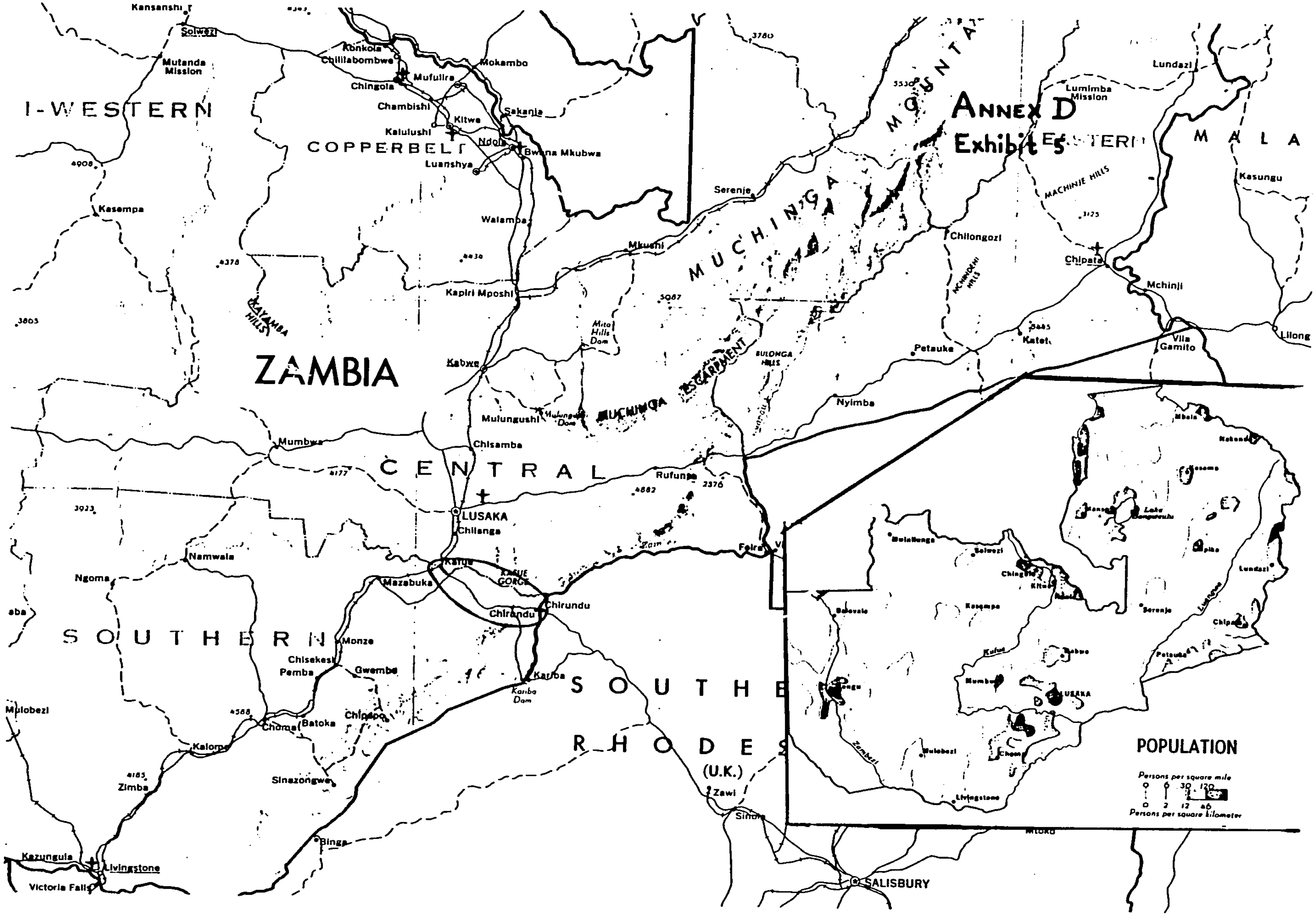
Nowhere in this region are there extensive deposits of arable soil, the topography being too broken. The arable soils are restricted to the narrow valleys and the alluvial terraces of the large rivers. Although limited in extent the soils generally being of fairly recent origin, are good.

The vegetation cover of the hills and escarpment is mostly briefly-deciduous miombo woodland dominated by Jubernardia globiflora on gravelly soils, Erachstegia glaucescens where there are large boulders, and B. boemii on patches of deeper soil boudering escarpment streams. A drier decidous woodland with the white-barked Sterculia quinquelobe, with associated thicket patches, occurs on the lower escarpment slopes.

North of the Kafue Bridge is a patch of dense decidous thicket growing on excessively drained sandy soil, and to the south of the bridge is a patch of mopane woodland (dominated by the tree Colophospermum morane, characteristic of sodium-influenced soils.

The flat area forming the headwaters of the Kesya is a heavy, cracking clay soil with grassland. Among many of the streams on the plateau and in the less steep parts of the escarpment are narrow grassy dambos.

The vegetation of the Zambezi Valley is generally of a much drier sort, except along the permanent streams. On the deeper alluvial terraces the dominant trees are Acacia tortilis, or A. albida bordering water courses, with clumps of Combretum obovatum, and a ground cover of the tufted perennial grass. Elsewhere the soils are either shallow, are underlain by impervious clays, or consist of free-draining sand.



Annex D
Exhibit 5
ZAMBIA
I-WESTERN
COPPERBELT
CENTRAL
SOUTHERN
EASTERN
MALA
SOUTHERN RHODESIA
(U.K.)
MUCHINGA MOUNTAINS
MUCHINGA ESCARPMENT
Kansanshi
Solwezi
Mutanda Mission
Konkola
Chililabombwe
Mufulira
Mokambo
Chingola
Chambishi
Kitwe
Kalulushi
Sakania
Ndola
Bwana Mkubwa
Luanshya
Kasempa
Walamba
Serenje
Mkushi
Kapiri Mposhi
Kabwe
Mulungushi
Chisamba
Mumbwa
Rufunsa
LUSAKA
Chilanga
Namwala
Ngoma
Kafue
KAFUE GORGE
Mazabuka
Chirundu
Monze
Chisekesi
Pemba
Gwembe
Kariba
Kariba Dam
Choma
Batoka
Chipepo
Kalomo
Zimba
Sinazongwe
Mulobezi
Binga
Kazungula
Livingstone
Victoria Falls
Zawi
Sinoia
SALISBURY
Feira
Nyimba
Petauke
Katete
Chipata
Chilongozi
Lundazi
Lumimba Mission
Kasungu
Mchinji
Vila Gamito
Lilong
MACHINJE HILLS
BULONGA HILLS
KAYAMBA HILLS
Mita Hills Dam
Mulungushi Dam
POPULATION
Persons per square mile
0 6 30 120
0 2 12 46
Persons per square kilometer

ANNEX E

ECONOMIC ANALYSIS ANNEX 1/

In reading this section, it is important to keep in mind several factors which influenced the data as presented. Of these factors the most important is the slim data base upon which traffic growth projections were based. Since the road was closed during a recent seven-year period (1973-early 1980), there is no reliable historical trend on which to develop accurate growth models or projections. Furthermore, the data sample was not large and there were considerable differences in the data on average daily traffic (ADT) between records on the Zimbabwean and Zambian sides of the bridge linking the two countries. These factors have necessitated the use of an unusually large number of assumptions in the report and is the reason why the most conservative assumptions were selected in arriving at a final B/C ratio.

1. Benefits and Costs

The benefits of the project fall under two main categories: road user savings and road maintenance savings. Under the category of road user savings, vehicle operating costs under existing conditions are compared with costs under improved, upgraded road conditions that will result from the execution of the project. The difference between these costs is defined as road user savings (including less frequent maintenance, better gasoline mileage, etc.), and is credited as a benefit of the project. The critical variables in determining road user savings are (1) the average daily traffic, both current and projected, and (2) the composition of this traffic in terms of passenger cars, and light and heavy vehicles.

Benefits derived from road maintenance savings are calculated by comparing the cost of maintaining a poor, steadily deteriorating road surface with the cost of maintaining a new road. The savings which the Government will realize from the lower cost of maintaining a new road are considered as project benefits, recognizing that offsetting maintenance costs are included in the cost stream of the B/C analysis.

1/ The information in this section consists of the most relevant sections of an economic analysis prepared by the design team economist, Dr. P. Moeller. The entire report is on file at the AFR/SA office.

The cost side of the B/C analysis incorporates (1) all project costs for road construction including AID and GRZ contributions totalling $17.7 million, and (2) road maintenance costs over the life of the project.

2. Assumptions

The main assumptions on which the analysis is based include the following:

a) Average Daily Traffic. The basic assumption is that average daily traffic will be 105 for twenty years beginning in 1982. (See Table 1). This is based on truck traffic only, since passenger vehicle traffic is negligible. The traffic count is calculated from Kafue rather than the border, since traffic is heavier to Kafue. Variations of this assumption include annual growth rates in ADT of 5% and 7%, and induced traffic of 10% in 1984. Induced traffic would result from additional cargo traffic brought about by the improved, upgraded road, drawing traffic away from other alternative transport methods.

b) Composition of traffic. This assumption relates to heavy vehicle (truck) traffic. Of total heavy vehicle traffic, 20% is assumed to be light trucks of 5 to 7 tons capacity, and 80% is heavy trucks of 24 tons or more capacity. Another version assumes a 40% to 60% split of small versus large trucks, although traffic patterns to date indicate the former figure is likely to be more realistic (see Table 2).

c) Road User Savings. Alternative differentials are considered under this assumption, ranging from a paved road in good condition to a gravel road in fair condition, and from a paved road in good condition to a gravel road in poor condition. (See Tables 3-5).

d) Road Maintenance Savings. This assumption considers maintenance costs without the project, or routine versus periodic maintenance with the improved upgraded road.

e) Differing rehabilitation mixes of overlay versus reconstruction for both 1982 and 1983 are considered under this alternative.

f) Costs for overlay and for reconstruction form the basis of this last assumption.

The most conservative set of assumptions endorsed by the design team includes a daily traffic count with 5% growth; the more conservative composition of heavy versus light vehicle

TABLE 4

ZAMBIA: PROJECTED AVERAGE DAILY TRAFFIC RATES,

1982-2001 FOR THE CHIRUNDU/KAFUE ROAD

	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
Annual rate of increase	5%	7%	5%	7%	5%	7%	5%	7%	5%	7%	5%	7%
Induced traffic 1984	0	0	10%	10%			10%	10%			10%	10%
1981 ADT at Chirundu	40	40	40	40	50	50	50	50	65	65	65	65
Adjusted for (x2.5) entire 82 Kms	100	100	100	100	125	125	125	125	162.5	162.5	162.5	162.5
1982	105.0	107.0	105.0	107.0	131.3	133.8	131.3	133.8	170.6	173.9	170.6	173.9
1983	110.3	114.5	110.3	114.5	137.9	143.2	137.9	143.2	179.1	186.1	179.1	186.1
1984	115.8	122.5	121.3	128.2	144.8	153.2	151.7	160.4	188.1	199.1	197.0	208.4
1985	121.6	131.1	127.4	137.2	152.0	163.9	159.3	171.6	197.5	213.0	206.9	223.0
1986	127.7	140.3	133.8	146.8	159.6	175.4	167.3	183.6	207.4	227.9	217.2	238.6
1987	134.1	150.1	140.5	157.1	167.6	187.7	175.7	196.5	217.8	243.9	228.1	255.3
1988	140.8	160.6	147.5	168.1	176.0	200.8	184.5	210.3	228.7	261.0	239.5	273.2
1989	147.8	171.8	154.9	179.9	184.8	214.9	193.7	225.0	240.1	279.3	251.5	292.3
1990	155.2	183.8	162.6	192.5	194.0	229.9	203.4	240.8	252.1	298.9	264.1	312.8
1991	163.0	196.7	170.7	206.0	203.7	246.0	213.6	257.7	264.7	319.8	277.3	334.7
1992	171.2	210.5	179.2	220.4	213.9	263.2	224.3	275.7	277.9	342.2	291.2	358.1
1993	179.8	225.2	188.2	235.8	224.6	281.6	235.5	295.0	291.8	366.2	305.8	383.2
1994	188.8	241.0	197.6	252.3	235.8	301.3	247.3	315.7	306.4	391.8	321.1	410.0
1995	198.2	257.9	207.5	270.0	247.6	322.4	259.7	337.8	321.7	419.2	337.2	438.7
1996	208.1	276.0	217.9	288.9	260.0	345.0	272.7	361.4	337.8	448.5	354.1	469.4
1997	218.5	295.3	228.8	309.1	273.0	369.2	286.3	386.7	354.7	479.9	371.8	502.3
1998	229.4	316.0	240.2	330.7	286.7	395.0	300.6	413.8	372.4	513.5	390.4	537.5
1999	240.9	338.1	252.2	353.8	301.0	422.7	315.6	442.8	391.0	549.4	409.9	575.1
2000	252.9	361.8	264.8	378.6	316.1	452.3	331.4	473.8	410.6	587.9	430.4	615.4
2001	265.5	387.1	278.0	405.1	331.9	484.0	348.0	507.0	431.1	629.1	451.9	658.5

TABLE 2

ZAMBIA: CALCULATION OF AVERAGE DAILY TRAFFIC FOR KAFUE JUNCTION ON THE CHIRUNDU/KAFUE ROAD, JUNE 1-7, 1981

		Full Week (0600-1800 hrs)		Selected Days (0600-1800 hrs)		Night Sample (1800-2400 hrs)	
Date	Day of Week	Total Vehicles	Heavy Vehicles	Total Vehicles	Heavy Vehicles	Total Vehicles	Heavy Vehicles
June 1, 1981	M	384	144				
June 2, 1981	T	456	192	456	192	114	48
June 3, 1981	W	448	176	448	176		
June 4, 1981	T	432	180	432	180	94	30
June 5, 1981	F	416	149	416	149		
June 6, 1981	S	571	143				
June 7, 1981	S	387	73				
Total		3,094	1,057	1,752	697	208	78
Average		442	151	438	174.2	104	39

Correction for total vehicles:

$$\frac{104}{438.0} = 0.32$$

$$3094 \times 1.32 = 4084.08 \div 7 = 583.44 \text{ ADT}$$

Correction for total heavy vehicles:

$$\frac{39.0}{174.2} = 0.22$$

$$1057 \times 1.22 = 1289.54 \div 7 = 184.22 \text{ ADT for HV}$$

Percentage of HV = 31.6%

Of Which:

Two axle trucks	=	7.4%)	
Three or more axled trucks	=	70.0%)	ADT = 167
Any axles with trailer	=	13.2%)	
Buses	=	6.3%	
Road Department Vehicles	=	3.0%	
Total		99.9%	

(does not = 100% of rounding)

Source: Statistical Section, Roads Department, Government of the Republic of Zambia, Lusaka, June 1981.

TABLE 3

ZAMBIA: VEHICLE OPERATING COSTS, 1977[1/]

Type of Roads	Condition	Passenger Cars	7-ton Trucks	24-ton Trucks
		(K per 100 vehicles/km)		
Bitumen	Good	10.0	33.0	62.0
	Fair	10.5	34.5	64.5
	Poor	11.0	36.0	67.0
Gravel	Good	11.0	42.0	80.0
	Fair (i)[2/]	15.0	50.5	92.0
	(ii)[3/]	16.0	53.5	97.5
	Poor	18.0	61.5	111.5
	Very Poor [4/]	20.0	78.0	143.0
Earth	Good	13.0	49.0	--
	Poor	20.0	78.0	--

1/ Net of taxes and duties in November 1977 prices.

2/ Roads receiving adequate level of routine maintenance but no periodic maintenance.

3/ Roads receiving low level of routine maintenance and no periodic maintenance.

4/ Reverting to earth road status.

Source: IBRD Mission Estimates.

TABLE 4

ZAMBIA: VEHICLE OPERATING COSTS DIFFERENTIALS BY ROAD TYPE AND VEHICLE TYPE

	K per 100 vehicles/km		
	Passenger Cars	7-ton Trucks	24-ton Trucks
Bitumen, Good to Bitumen, Poor	1	3	5
Bitumen, Good to Gravel, Good	1	9	18
Bintumen, Good to Gravel, Fair (i)	5	17.5	30
Bitumen, Good to Gravel, Fair (ii)	6	20.5	35.5
Bitumen, Good to Gravel, Poor	8	28.5	49.5

Source: Differential taken from 1977 IBRD Mission Calculations.

TABLE 5

ZAMBIA: ADJUSTED VEHICLE OPERATING COSTS, 1981[1/]

Type of Roads	Condition	Passenger Cars		7-ton Trucks		24-ton Trucks	
		(K per 100 vehicles/km)					
		A	B	A	B	A	B
Bitumen	Good	19.9	30.0	65.6	102.2	123.2	192.0
	Fair	20.9	32.5	68.6	106.8	128.2	199.7
	Poor	21.9	34.1	71.5	111.5	133.1	207.5
Gravel	Good	21.9	34.1	83.5	130.1	159.0	247.7
	Fair(i)[2/]	29.8	46.5	100.4	156.4	182.8	284.9
	(ii)[3/]	31.8	49.5	106.3	165.7	192.8	300.4
	Poor	35.8	55.7	122.2	190.4	221.6	357.7
	Very Poor[4/]	39.7	61.9	155.0	241.5	284.2	442.8
Earth	Good	25.8	40.3	97.4	151.7	--	--
	Poor	39.7	61.9	155.0	241.5	--	--

1/ Net of taxes and duties in July 31, 1981 prices (rounded to nearest .1)

A Adjusted at rate of 20 percent per annum (factor of 1.9872)
B Adjusted to higher rates reported (factor of 3.0967)

2/ Roads receiving adequate level of routine maintenance but no periodic maintenance.

3/ Roads receiving low level of routine maintenance and no periodic maintenance.

4/ Reverting to earth road status.

Source: Adjustment of 1977 IBRD Mission Calculations.

traffic; the most conservative estimates of road user savings and road maintenance savings; and the higher mix of reconstruction versus strengthening through overlay. As noted above, this conservative set of assumptions produces a B/C of 1.09 or an IRR of 14%.

3. Nonquantifiable Benefits.
In addition to providing the shortest and most efficient transport route between Zambia and a seaport, the road has the following non-quantifiable benefits:

Accident Reduction. The deteriorating condition of the existing road has resulted in an increase in the accident rate for the route. In addition to damage to the vehicles and their cargo, the loss of human life is frequently associated with accidents on the route. This loss of physical and human capital may not be readily quantified but is a serious drain of scarce resources.

Accessibility. The time and cost of travel to a rural area from the capital or other urban point often constitutes a critical factor in the delivery of social services and the decision to initiate development projects. If a government or donor official can visit the site easily the changes for implementing special development activities, such as health or agricultural projects, is enhanced.

Time Savings. The deteriorating condition of the road increases the amount of time it takes to move goods and services over the route. The value placed on time is most significant in a developed society, and the most immediate impact relates to the transport of perishables over the route. In view of the shortage of foreign exchange in Zambia, however, delays in transport represent real costs in other ways. On the one hand, items held up in transit delay the realization of profit on the expenditure of foreign currency. On the other hand, because of the shortage of foreign currency, suppliers maintain limited inventories of spare parts; the delay in the receipt of an item could mean a reduction of the productive capacity of an industry until the part arrives.

Consumer Prices. In this case transport impacts on consumer prices not only in items of the reduced costs needed for vehicle operation to the price the consumer pays but also in terms of the price or availability of an item because of the total supply in Zambia. The role played by this road in food distribution results in direct and indirect impacts which filter throughout the cash economy. Particularly significant for consumption is the cargo induced as a result of the project which would otherwise not be imported or distributed.

Impact on Productive Activities: Transport Sector. The implications of a disruption of traffic over this route on the transport sector, including vehicle servicing as well as the trucking industry itself and commercial sectors, is readily apparent. The impact of road rehabilitation on both induced traffic as well as general growth during the next twenty years, should not be minimized. The small-scale entrepreneur might be particularly affected by the results of the project, especially in terms of short distant haulage from one point along the route to another. The importance of this route to the transport and commercial sector, moreover, is reinforced by the fact that it cannot be replaced by another route at less than two or three times the cost, or by any such other mode of transport as rail or air, as a result of existing levels of congestion.

Other Sectors. The most direct impact on other associated sectors would be upon agriculture. At one time the GRZ had planned the initiation of a banana growing scheme along the east side of the route and a cotton growing scheme off to the west of the road. Implementation was substantially prevented as a result of the closure of the border and restrictions on traffic over the route as a result of security considerations. Access for the banana project particularly would have to be over this route. Small producer marketing would clearly be dependent on transport over this route as well. Since much of the machinery and spare parts for the mining industry is brought into Zambia over the route, the disruption of traffic would clearly restrict the extractive or other productive industries albeit at a less significant level.

Government Revenue. The GRZ obtains revenue not only from transport fees charged the trucking industry, but also from taxes placed on the earnings of sectors whose productivity is directly or indirectly associated with transport over this route. Although an absolute value could not be readily determined, this revenue would increase directly in proportion to the annual increase in traffic projected for the route, i.e., about 7 percent a year.

Department of State

TELEGRAM

ORIGIN AID-35

ORIGIN OFFICE AFSA-03
INFO AAAF-01 AFDP-02 AFOR-05 PPCE-01 PDPR-01 PPPB-03 GC-01
GCAF-01 PPEA-01 GCFL-01 STA-10 FM-02 CMGT-02 CTR-02
ENGR-02 CH3-01 AFDA-01 RELO-01 SM-03 /042 AB

INFO OCT-03 AF-10 EB-03 /053 R

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APPROVED BY AID/AA/AFR:WHNORTH
AFR/SA; MV DAGATA
GC/AFR; T BORK
AFR/DP; R STACY
AFR/SA;T MORSE
AFR/DR; J KOEHRING
AFR/SA; B WRIN
AFR/DR; D BLANE
AFR/SA; L POMPA
AFR/DR/ENG:TTUMMURELLO
SER/CM/SD:PCASTEEL
AF/EPS:DWATERMAN

------------------965255 050521Z /12

O 050125Z MAY 81
FM SECSTATE WASHDC
TO AMEMBASSY LUSAKA IMMEDIATE
AMEMBASSY SALISBURY IMMEDIATE
AMEMBASSY NAIROBI IMMEDIATE

UNCLAS STATE 114885

AIDAC, NAIROBI FOR REDSO

E.O. 12065: N/A

TAGS:

SUBJECT: ZIM-ZAM ROAD PID

REF: A) STATE 096865 B) LUSAKA 1728 C) SALISBURY 1525

1. SUMMARY. SUBJECT PID WAS REVIEWED BY ECPR ON APRIL 23, 1981 AND IS APPROVED FOR PP DESIGN. IF PROJECT IS APPROVED, ZIMBABWE PORTION WOULD BE FUNDED FROM MAKUTI/CHIRUNDU ROAD PROJECT 613-0297; ZAMBIA PORTION WOULD BE FUNDED FROM REGIONAL TRANSPORT AND STORAGE DEVELOPMENT PROJECT 698-0299. DECISIONS TAKEN DURING THE REVIEW ARE SUMMARIZED BELOW FOR CONSIDERATION IN PP DESIGN AND SEPARATE ACTIONS AS SPECIFIED. END SUMMARY.

2. ON APRIL 23 ACTING AA/AFR CHAIRED ECPR TO REVIEW SUBJECT PID. REDSO IS CONGRATULATED ON RAPID AND THOROUGH PID. PRINCIPAL ISSUES DECIDED ARE AS FOLLOWS.

3. SHOULD THE PROJECT BE EXPANDED TO INCLUDE ANOTHER 28 KMS OF ROAD IN ZIMBABWE? ECPR RECOGNIZED THAT PID ADDRESSED ONLY THOSE ROAD PORTIONS THREATENED BY COLLAPSE OF SODIC SOILS AT TIME OF THEIR VISIT. IT WAS AGREED THAT ROAD PORTIONS BEYOND THE TWELVE KMS COVERED IN THE PID) WHICH HAVE BEEN DEFINITELY IDENTIFIED BY SODIC SOIL FAILURES ALSO SHOULD BE SUBSUMED INTO PROJECT. IN ADDITION, GOZ MAY HAVE VALID ARGUMENTS FOR EXTENDING U.S. ASSISTANCE TO RETIREMENT WORK (BRITISH TECHNICAL TERM FOR REHABILITATION OF A ROAD WITH EXPIRED DESIGN LIFE) ON ALL FORTY KMS. THESE SHOULD BE CONSIDERED BY MISSION AND GOZ AGAINST THE OVERALL DEVELOPMENT NEEDS OF ZIMBABWE. SINCE U.S. FUNDS FOR ZIMBABWE PORTION OF PROJECT ARE TO COME FROM FY 81-82 BILATERAL LEVELS, THE ECPR FELT THAT THE PRIORITY OF ANY WORK BEYOND THE PID-IDENTIFIED 12 KMS SHOULD BE ASCERTAINED FROM THE GOZ AND REFLECTED IN THE PROJECT DESIGN AFTER CONSULTATION WITH AID/W (SEE BELOW).

ACTION: REDSO/REILLY IS REQUESTED TO VISIT ZAMBIA ON/OR ABOUT MAY 18 TO MAY 22 AND THEN PROCEED TO ZIMBABWE ASAP TO UNDERTAKE THE FOLLOWING:

A) CONFIRM TOTAL NUMBER OF KMS IDENTIFIED TO DATE AS PROBABLY AFFECTED BY SODIC SOIL FILLS (SEE REFTEL C, PARA 2);

B) EXAMINE ARGUMENTS FOR ASSISTANCE TO REHABILITATE THE REMAINING KMS SCHEDULED FOR RETIREMENT:

1) ON THE BASIS OF ECONOMIES OF SCALE

2) ON THE BASIS OF THE EFFECTS OF PROJECTED TRAFFIC

3) ON THE BASIS OF CURRENT OR PROJECTED DETERIORATION OF THE ROAD SURFACE.

ACTION: USAID/SALISBURY AND REDSO/EA ARE REQUESTED TO APPROACH THE MINISTRIES OF ECONOMIC PLANNING AND FINANCE TO ASCERTAIN GOZ PRIORITY (BEFORE PP TEAM ARRIVES) OF FUNDING 12 VS 40 KMS UNDER PROPOSED PROJECT. ALSO, IF AID PARTICIPATES IN THE COST OF REHABILITATING ALL 40 KMS, WOULD ENTIRE AMOUNT OF GOZ FUNDS CURRENTLY PROGRAMMED/BUDGETED FOR THIS ROAD BE REQUIRED?

4. SHOULD AID PROVIDE THE ONLY DONOR FINANCING FOR THIS PROJECT? THE ECPR NOTED THE SIZEABLE COST OF THE ZAMBIAN PORTION OF THE ROAD (DOLS 18-25 MILLION) IN RELATION TO LIMITED (UP TO DOLS 12.5 MILLION) REGIONAL TRANSPORT FUNDS AVAILABLE DURING FY 81. WE WOULD PREFER NOT TO MORTGAGE FY 82-83 FUNDS BECAUSE IT WOULD RESTRICT OUR ABILITY TO SUPPORT OTHER SOUTHERN AFRICA REGIONAL TRANSPORT NEEDS. OUR PREFERENCE (SEE BELOW) IS TO A) SEEK GRZ FUNDS FOR THE SHORTFALL AND B) ACTIVELY SOLICIT CO-FINANCING WITH OTHER DONORS (ASSUMING GRZ COULD NOT MEET FULL SHORTFALL). AID/W IS WELL AWARE OF THE PROBLEMS OF TIMING AND FUNDING MODALITIES THAT THIS APPROACH IMPLIES, BUT LIMITED U.S. FUNDS SUGGEST SOME MIX OF FUNDS. ACTION: REQUEST USAID/LUSAKA AND SALISBURY COMMENT REGARDING RECOMMENDED APPROACH FOR SOLICITING CONTRIBUTION BY OTHER DONORS, INCLUDING THE APPROPRIATE ROLES OF GRZ/GOZ AND POSSIBLE ROLE FOR SATCC. WE WOULD LIKE TO DISCUSS POSSIBLE COLLABORATION WITH CADA MEMBERS AND OTHER POSSIBLE DONORS (EEC, IBRD, BADEA, JAPAN) AS SOON AS AN AGREED APPROACH IS FORMULATED. IN ANY CASE, WE WOULD RECOMMEND AUTHORIZATION REPEAT AUTHORIZATION OF FULL ZAMBIA REQUIREMENT, IF OTHER DONOR FUNDING NOT YET ARRANGED WHEN PP PRESENTED.

5. WHAT FISCAL CONTRIBUTION CAN THE GRZ BE EXPECTED TO MAKE? GOZ WILL EFFECT SIGNIFICANT CONTRIBUTION THROUGH FIELD WORK, DESIGN, AND SUPERVISION. WHILE THE ECPR RECOGNIZED THAT THERE IS NO LEGAL REQUIREMENT PERTAINING TO THIS REGIONAL ESF PROJECT IT NOTED THAT A SIGNIFICANT GRZ FINANCIAL INVOLVEMENT IS CRITICAL TO THE INTEGRITY OF THE PROJECT. GIVEN THE PRESENT SHORTAGE OF FOREIGN EXCHANGE IN ZAMBIA, HOWEVER, ECPR FELT GRZ WOULD ENCOUNTER DIFFICULTIES NOT ONLY IN FUNDING BUT ALSO IN RAPIDLY IMPLEMENTING THE RESEALING OF THE ROAD AS RECOMMENDED IN THE PID. GIVEN THE SIGNIFICANT SAVING INVOLVED IN THE RESEALING EFFORT AID/W IS PREPARED TO MOVE IMMEDIATELY WITH A LIMITED PP FOR THE RESEALING INSTEAD OF CALLING ON GRZ FOR THIS CONTRIBUTION. SUCH ACTION IS DEEMED APPROPRIATE BOTH BECAUSE OF THE URGENCY INVOLVED IN STABILIZING THE ROAD AND REDUCTION OF ULTIMATE PROJECT COST. WE HOPE THIS ACTION BY AID WILL PROVIDE OCCASION FOR NEGOTIATING A SIGNIFICANT GRZ

W. Tate

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ANNEX F

FINANCIAL CONTRIBUTION TO THE PROJECT.

ACTION: THE ECPR REQUESTS MISSION PURSUE A PROJECT CONTRIBUTION BY THE GRZ ALONG THE FOLLOWING LINES:

A) PLEASE STRESS THE IMPORTANCE OF A SIGNIFICANT CONTRIBUTION BY THE GRZ.

B) PLEASE NOTE THAT GRZ COVERAGE OF RESEALING COSTS AS PROPOSED IN THE PID WAS INTENDED TO SERVE AS A DEMONSTRATION OF GRZ COMMITMENT.

C) RECOGNIZING THE NEED FOR TIMELY ACTION AND RECOGNIZING XISTING GRZ BUDGETARY CONSTRAINTS, AID IS PREPARED TO PURSUE WITH GRZ DEVELOPMENT OF LIMITED, INTERIM PROJECT TO COVER RESEALING REQUIREMENT.

D) HAVING TAKEN THIS ACTION AID WILL EXPECT THE GRZ, WITHIN THE NEXT TWO YEARS (BEGINNING NOVEMBER 1982 WITH CONSTRUCTION CONTRACT) TO MAKE A SIZEABLE CONTRIBUTION (DOLS 4-6 MILLION) TO THE MAIN REHABILITATION PROJECT. THIS WILL ALLOW THE GRZ TO PLAN AND BUDGET ITS CONTRIBUTION AND TAKE INTO ACCOUNT THE IMPACT OF THE IMF AGREEMENT AND THE IBRD LOAN FOR ROAD MAINTENANCE.

6. CAN THE TIMEFRAME FOR ACCELERATED PROJECT IMPLEMENTATION BE SUPPORTED AS CALLED FOR IN THE PID?

A) PROJECT SAVINGS (DOLS 7.4 MIL) FROM IMMEDIATE RESEALING AND ACCELERATED IMPLEMENTATION WERE NOTED BY ECPR. THESE SHOULD BE REVERIFIED BY PP TEAM. IN THE MEANTIME, AS NOTED ABOVE, ECPR AUTHORIZES IMMEDIATE AID/W DEVELOPMENT OF A SEPARATE PP FOR THE RESEALING.

ACTION: REDSO/REILLY. AS REQUESTED IN PARA 3 ABOVE, REQUEST REILLY ACCOMPLISH FOLLOWING IN RELATION TO A SEPARATE RESEALING PROJECT.

1) RECONFIRM ECONOMY OF PROCEEDING NOW WITH RESEALING.

2) VERIFY GRZ CAPACITY TO MANAGE THE TENDERING/SELECTION PROCESS, INCLUDING WRITING THE IFB.

3) DETERMINE/VERIFY TECHNICAL SPECIFICATIONS, INCLUDING IDENTIFICATION OF SPECIFIC ROAD SECTIONS WHICH WILL BE RESEALED, SCHEDULE FOR TENDERING PROCESS, CONTRACTOR MOBILIZATION AND RESEALING TIME, ETC.

4) VERIFY GRZ CAPACITY TO SUPERVISE RESEALING. RECOMMEND ALTERNATIVE ARRANGEMENTS IF JUDGED NECESSARY.

5) MAKE FAA 611(A) DETERMINATION RE COMPLETENESS OF ENGINEERING DATA AND ACCURACY OF RESEALING COST ESTIMATES.

6) MAKE NATIONALITY DETERMINATION AS TO FIRMS MOST LIKELY TO BID AND DEVELOP/DRAFT WAIVER FOR APPROPRIATE GEOGRAPHIC CODE, AS NECESSARY.

B) SEPTEL FOLLOWS WITH FURTHER DETAILS REGARDING ACTIONS TO BE TAKEN PREPARATORY TO RESEALING.

C) ECPR SUPPORTED ACCELERATED IMPLEMENTATION WHENEVER POSSIBLE BUT THIS CANNOT BE AT THE EXPENSE OF SOUND PROJECT IMPLEMENTATION. PP SHOULD CONTAIN ALTERNATIVE PROPOSALS. PROJECT DESIGN IS SCHEDULED TO BE COMPLETED FOR AUTHORIZATION BY END AUGUST 1981.

7. WHAT SPECIAL REQUIREMENTS WILL BE NECESSARY FOR PROJECT MANAGEMENT? ECPR IS IN FULL ACCORD WITH NEED

FOR ARRANGING PROJECT MANAGEMEN- AS EARLY IN PRE-IMPLEMENTATION PROCESS AS POSSIBLE. AID/W REQUESTS THAT UNTIL A PROJECT MANAGER HAS BEEN IDENTIFIED, REDSO FULFILL PROJECT MANAGEMENT RESPONSIBILITIES IN CONJUNCTION WITH AID REP LUSAKA. AID/W HAS INITIATED A SEARCH FOR A DIRECT HIRE PROJECT MANAGER. REQUEST LUSAKA AND REDSO DEVELOP PD AND CABLE SAME TO AID/W ASAP. WE ARE ALSO CONSIDERING TCN, IQC OR PSC COVERAGE AS AN INTERIM MEASURE.

8. WHAT IS THE CAPACITY OF THE GRZ TO MAINTAIN THE ROAD AFTER IT HAS BEEN REHABILITATED? AID/W HAS CONFERRED WITH THE IBRD CONCERNING DELAYED IMPLEMENTATION OF THE LOAN FOR ROAD MAINTENANCE (THIRD HIGHWAY PROJECT). IBRD BELIEVES LONG TIME QUOTE LOG-JAM END QUOTE HAS BEEN BROKEN. IBRD IS OPTIMISTIC THAT FULL STAFF WILL BE ON BOARD BY SEPT-DEC 1981, AND PROJECT WILL PROCEED ON SCHEDULE. AID/W FEELS PROGRESS SHOULD BE VERIFIED BY PP TEAM AND CONTINUOUSLY MONITORED BY FIELD. (MEMO OF IBRD FINDINGS BEING POUCHED).

9. WE BELIEVE ONLY OTHER ISSUE IN PID REQUIRING AID/W GUIDANCE CONCERNED LOAN VS. GRANT FUNDING. AID/W CONCURS WITH POSITION STATED IN PID THAT PROJECT FUNDING SHOULD BE MADE AVAILABLE ON A LOAN BASIS ON AID'S MOST CONCESSIONAL TERMS.

10. ISSUES DEFERRED FOR RESOLUTION IN THE FIELD INCLUDE THE ECONOMIC ANALYSIS AND IMPLEMENTATION CAPACITY OF THE GRZ. AID/W FOLLOW-UP ACTIONS INCLUDE: CONTRACTED SERVICES OF A TRANSPORT ECONOMIST (MOELLER) ARE BEING ARRANGED FOR JUNE TDY FOR ECONOMIC ANALYSIS IN ZAMBIA AND REVIEW SAME IN ZIMBABWE; CONTRACTED ENGINEERING ASSISTANCE IN CONJUNCTION WITH REDSO FOR GRZ APPRAISAL OF CAPACITY OF ROADS DEPARTMENT TO PARTICIPATE IN PROJECT DESIGN, TENDERING, IMPLEMENTATION AND SUPERVISION.

11. AID/W IS CONCERNED ABOUT ACTIONS TO BE TAKEN BY THE GOZ/GRZ IN ADVANCE OF THE ARRIVAL OF THE PP TEAM IN JULY. INCLUDED IN THIS ARE THE ECONOMIC FEASIBILITY STUDY OF THE MAKUTI/CHIRUNDU SECTION TO BE UNDERTAKEN BY THE GOZ AND A TRAFFIC COUNT AND COLLECTION OF DATA ON THE CHIRUNDU/NAFUE SECTION BY THE GRZ IN ADVANCE OF THE ARRIVAL OF TRANSPORT ECONOMIST MOELLER IN EARLY JUNE TO DO AN ECONOMIC APPRAISAL FOR THE ZAMBIAN SECTION OF THE ROAD. THE MINISTRIES ARE REQUESTED TO VERIFY THE STATUS OF SUCH ACTIONS AND PROVIDE ANY RELEVANT COMMENTS. SPECIFIC DETAILS TO FOLLOW IN SEPTEL. SEPTEL ON PP

DESIGN GUIDANCE INCLUDING SCHEDULE TO FOLLOW. CLARK