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DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D.C. 20523

CAPITAL ASSISTANCE PAPER

Proposal and Recommendations
For the Review of the
Development Loan Committee

ETHIOPIA - FIFTH HIGHWAY PROGRAM

AID-DLC/P-1033

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June 8, 1972

MEMORANDUM FOR THE DEVELOPMENT LOAN COMMITTEE

SUBJECT: Ethiopia - Fifth Highway Project

Attached for your review are the recommendations for authorization of a loan in an amount not to exceed \$9,300,000 to the Imperial Ethiopian Government to assist in financing foreign exchange and local currency costs of engineering services and upgrading and asphalt surfacing of the three primary roads and the foreign exchange costs of procurement of road maintenance equipment under the Fifth Highway Project.

This loan proposal is scheduled for consideration by the Development Loan Staff Committee at a meeting in the near future.

Rachel R. Agee
Secretary
Development Loan Committee

Attachments:
Summary and Recommendations
Project Analysis
ANNEXES I-IX

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June 8, 1972

ETHIOPIA: Fifth Highway ProgramSummary and Recommendation

1. Borrower: Imperial Ethiopian Government (IEG)
Ministry of Finance, for the Imperial
Highway Authority (IHA)
2. Amount of Loan: \$9,300,000
3. Terms:
 - Interest: 2% per annum during the grace period: 3%
per annum thereafter.
 - Maturity: 40 years including a 10-year grace period.
 - Currency of Repayment: Principal and interest to be
paid in U.S. dollars
4. Total Cost of Project (millions of dollars)

IDA Credit	17.0
AID Loan	9.3
IEG Contribution	8.9
	35.2
5. Project Description: The Fifth Highway project consists of the following components: Upgrading and asphalt surfacing of three gravel primary roads (430 mk); construction of six gravel feeder roads (440 km); engineering supervision of the above roads; technical assistance, and procurement of construction and maintenance equipment. The A.I.D. assisted portion of the project consists of the asphalt surfacing of the three gravel roads, emergency road maintenance equipment for the IHA, and construction supervision services for the above three roads.
6. Purpose of Loan: To finance the foreign exchange and possibly local costs up to 65% of the total costs of the construction and supervision for the asphalt surfacing, and the foreign exchange costs of procurement of the road maintenance equipment.
7. Background: During 1971, the World Bank and the IEG developed the components for the Fifth Highway Project. In April 1972, when it became clear that the World Bank could not provide sufficient

International Development Association (IDA) funds to cover the external financing requirements of the Fifth Highway Project, the IEG and the World Bank requested that AID consider elements of the program which appeared to be most appropriate for AID financing, i.e., the asphaltting projects and the procurement of road maintenance equipment. The IEG's formal application for a loan of \$9.3 million for the Fifth Highway Program was submitted in June, 1972. The IEG has also applied to the World Bank for an IDA credit of \$17.0 million for the Fifth Highway Project.

8. Export-Import Bank Clearance: Received May 30, 1972.
9. Views of the Country Team: The Country Team strongly endorses the loan and the loan amendment.
10. Issues: None
11. Recommendation: Authorization of a loan to the Imperial Ethiopian Government not to exceed \$9.3 million to finance a portion of the Fifth Highway Program, in accordance with the draft authorization attached as Annex IX.

USAID/EARCDO Capital Assistance Committee:

Capital Development Officer: John Westley, USAID
General Engineering Advisor: David Gephart, USAID
Counsel: Robert Meighan, EARDCO

AID/W Capital Assistance Committee:

Capital Development Officer: Stephen Whitmer
Engineer: Robert Rose
Counsel: Michael Anzivina
Desk Officer: Dennis Baker

June 8, 1972

CAPITAL ASSISTANCE PAPERETHIOPIA: Fifth Highway ProgramI. BackgroundA. Project History

The Imperial Ethiopian Government (IEG) began a major program of highway development in 1950 and established the Imperial Highway Authority (IHA) in 1951. Under this program Ethiopia's all-weather road network increased from about 2,000 kilometers in 1951 to 8,045 kilometers in 1971, including 2,078 kilometers of asphalt road, 5,341 kilometers of gravel road, and 626 kilometers of all-weather earth road.

The bulk of IHA's external assistance has come from the World Bank Group and AID. The World Bank Group has extended a total of \$54.7 million in loans and credits for road development in Ethiopia, including \$5 million for the First Highway Program (1951-1957), \$15 million for the Second Highway Program (1957-1962), \$13.5 million for the Third Highway Program (1963-1968) and \$21.2 million for the Fourth Highway Program (1968-1973). A.I.D. has provided a total of \$12.1 million in loans to assist the IHA in conjunction with the IBRD's Second, Third, and Fourth Highway Programs.

IHA is presently completing the Fourth Highway Program, with assistance from the World Bank Group, Sweden and West Germany. The Fourth Highway Program includes the construction of 850 kilometers of all-weather road, the asphaltting of 170 kilometers of gravel road, feasibility studies for 800 kilometers of new all-weather roads, and the upgrading of the IHA's organization and management. The World Bank Group has provided a \$13.5 million IBRD loan and a \$7.7 million IDA credit, supplemented by a Swedish Government credit of \$5.8 million on IDA terms, to finance the foreign exchange costs of the construction of roads from Bedelle to Metu (130 kilometers) and Awash to Tendano (290 kilometers), the asphaltting of the Nazareth-Awash and Jimma-Agaro roads (170 kilometers), and feasibility studies and management assistance. West Germany has provided loans for \$10.0 million to assist in financing a road from Dilla to Moyale (430 kilometers) linking Addis Ababa to Kenya by all-weather road. (For the above routes, see Map, Annex II.) An A.I.D. loan of \$3.5 million is financing spare parts, shop tools and technical assistance to upgrade the capability of IHA's central and district equipment maintenance shops. (For the details of past IBRD and A.I.D. assistance to IHA, see Annex III.)

Based on studies financed under the Fourth Highway Program, and on preliminary studies undertaken by its Planning Programming Division, IHA began the detailed preparation of the Fifth Highway Program in late 1970. The final feasibility studies for the roads proposed for the Fifth Highway Program were completed by IHA between August and October 1971. A World Bank Group mission visited Ethiopia in November 1971 to appraise the proposed program, and in subsequent discussions with the IBRD, the IEG agreed that the Fifth Highway Program should include the construction of six gravel roads to IHA feeder road standards (440 kilometers), the asphalt surfacing of three roads constructed under previous programs (430 kilometers), technical assistance, to the local contracting industry, and purchase of equipment for emergency road maintenance. The World Bank Group proposed that 70% of the proposed program's total costs of \$33.4 million be financed by an IBRD loan of \$12.0 million and an IDA credit of \$12.75 million. The IBRD loan was to be extended over 24 years and bear interest at 7 percent, while the IDA credit was to extend on standard terms, i.e., repayment period of 30 years with a credit charge of 3/4 of 1% per annum. In view of Ethiopia's rising debt service burden and difficult long-term balance of payments prospects, the IEG objected strongly to the inclusion of the IBRD loan in the proposed financing package and requested that the World Bank Group's financing for the Fifth Highway Program consist entirely of IDA funds.

The World Bank Group agreed that the Fifth Highway Project financing should be provided entirely through IDA if possible but was unable to respond fully to the IEG request because IDA funds were not available pending the IDA replenishment. Consequently, the IBRD and IEG requested that A.I.D. consider financing a portion of the project. An IEG delegation visited Washington in May 1972 to finalize the details of the IDA and AID loans. During these negotiations, AID representatives agreed to consider financing the World Bank Group foreign exchange estimates for certain components of the project; i.e. the construction and supervision for the asphalt surfacing work, and the purchase of emergency road maintenance equipment. The IDA agreed to increase IDA funding for the project from \$12.75 million to \$17.0 million including an increase about \$1 million in local cost financing for the construction of six gravel feeder roads. The IEG submitted a Loan Application to AID in June 1972.

B. Borrower and Implementing Agency

The Borrower is the Imperial Ethiopian Government (IEG). The administration and implementation of the Fifth Highway Project is the responsibility of the Imperial Highway Authority.

The Imperial Highway Authority (IHA), a semi-autonomous government agency, was established in 1951 in conjunction with the IBRD loan to Ethiopia for the First Highway Program. The IHA's governing body is a Board of Commissioners, consisting of the Minister of Public Works as Chairman, the Vice Minister of Finance, the Vice Minister of Commerce, Industry and Tourism, and two other members appointed by the Emperor. One of these two members is the IHA General Manager, who is a qualified engineer and the executive head of IHA.

The IHA was recently reorganized with the assistance of management consultants financed by the World Bank Group under the Fourth Highway Program. The relevant aspects of IHA management and organization are discussed in detail in Section II B below. (For the IHA organization chart, see Annex IV.)

C. Relationship to AID's Strategy in Ethiopia

The U.S. assistance strategy for Ethiopia places major emphasis on the development of the agricultural sector, which is the dominant sector in the Ethiopian economy. This emphasis is strongly supported by the IBRD, and it is consistent with the IEG policy statement made at the May 1971 Ethiopian Consultative Group meeting held under the auspices of the IPPD, which identified agriculture as the priority sector for development. Other areas of emphasis are higher education and improved financial management.

The proposed project will contribute to the economic development of Ethiopia by reducing the country's potential debt service burden. The project will also strengthen IBRD efforts in future Consultative Group meetings to coordinate capital assistance and hopefully act as a catalyst for increasing other donor contributions to the development of Ethiopia. In a broad sense these are important U.S. objectives in Ethiopia.

D. Export-Import Bank Clearance

The Export-Import Bank Board of Directors reviewed the proposed loan on May 30, 1972 and concluded that, in view of the need for concessional terms, the project was not appropriate for Export-Import Bank financing.

I. Technical Analysis

A. Project Description

The proposed Fifth Highway Project consists of the following:

1. Upgrading and asphalt surfacing of three gravel primary roads constructed under the First and Third Highway Programs:

- (a) Welisso-Jirma (223 km);
- (b) Agaro-Bedelle (95 km); and
- (c) Lekenpti-Ghimbi (111 km).

2. Construction of six gravel roads to all-weather feeder road standards:

- (a) Dilla-Dodola (120 km);
- (b) Bunga-Mizan Teferi (79 km);
- (c) Agaro-Ghera-Chira (48 km);
- (d) Dejen-Mota (96 km);
- (e) Gelemso-Mechara (42 km); and
- (f) Eubajira-Zwair (48 km).

3. Supervision of the above by consultants.

4. Technical assistance by consultants to the IEG Planning Commission Office to study rural roads and recommend the organization necessary for planning, financing, constructing and maintaining rural roads, and to assist in carrying out the recommendations.

5. Technical assistance to the IIA for management, training, design, planning, research and road maintenance (total of 14 man-years) and purchase of training aids and research equipment.

6. Aid to the local contracting industry, including training by consultants in costing, organization and bidding procedures and the provision of funds for equipment purchases by successful local bidders for road works.

7. Purchase of urgently needed road maintenance equipment, based on the Phase I Report of the IIA Road Maintenance Study.

The items proposed for AID financing are the asphalt surfacing of the three primary roads (30 km), the purchase of urgently needed road maintenance equipment, and the provision of construction supervision services for the three primary roads. The remaining items are to be financed with assistance from the World Bank Group under an IDA credit.

B. Organization of the Imperial Highway Authority

1. General

The IHA headquarters is in Addis Ababa where facilities include an administration building, warehouse, component rebuild shop, materials testing laboratories, and a training center at nearby Alem Gana. Field operations are carried out through nine districts, each with its own administrative offices and equipment maintenance shops under a district engineer and district equipment superintendent. The IHA presently has about 7500 employees, including 5500 regular employees and 2000 day laborers. IHA owns and operates about 1,800 pieces of equipment, including 1,246 pieces of major equipment (graders, trucks, dozers, etc.), and 589 pieces of minor and support equipment (passenger cars, compressors, lubrication units, etc.).

From its establishment in 1951 until mid-1963, the management and engineering staff of the IHA were assisted by the U.S. Bureau of Public Roads under a management contract financed by the World Bank. Since May 1963, the management of the IHA has been in the hands of Ethiopians supported by foreign management and technical advisors under individual contracts. The number of foreign advisors has gradually been reduced in recent years, and at present totals 20, including 12 technicians provided under the AID-assisted Highway Equipment Repair Facilities Project.

In 1966 the World Bank arranged for U.S. management consulting firm, Public Administration Service (PAS), to undertake an evaluation of the organization, administration and operations of the IHA. PAS concluded in its report that the IHA was generally well managed, but it recommended a reorganization to improve the Authority's administrative and operational efficiency. The IHA requested that PAS assist in carrying out the recommendations of the report, and funds for a three-year contract with PAS were provided by the World Bank under the Fourth Highway Project (See Annex IV for the IHA Organization Chart). The reorganization was put into effect in July 1970, and the PAS recommendations for the various IHA divisions have been adopted, although there have been delays in implementing certain improvements in procedures. Consequently, the PAS contract, which was to terminate in September 1971, was extended to June 1972 and is to be extended for one more year to June 1974. Under the extension, which will be financed by the World Bank, the PAS team leader will remain in Ethiopia to assist in the continued implementation of the procedures developed by PAS, particularly in the auditing and cost accounting areas. The IDA credit for the Fifth Highway Project will also finance a design engineer to assist in improving the quality of design work, a transportation planner to advise the Planning and Programming Division on improved planning procedures, and a materials engineer to develop pavement design and construction practices based on local materials and sub-surface conditions.

2. IHA Road Design and Construction Operations:

The survey and design of roads for construction or major rehabilitation is the responsibility of the Design Division under the Office of the Chief Engineer. The Design Division has carried out an increasing proportion of the design of IHA roads, although foreign consultants still design and supervise major road projects. The Design Division prepared the plans and specifications for the roads to be constructed or surfaced under the Fifth Highway Project. The feasibility studies were prepared by the IHA Planning and Programming Division. The plans and specifications are adequate, but will be reviewed by foreign consultants prior to the completion of the bid documents.

Road construction (other than construction by IHA force account) is the responsibility of the Contract Construction Division, also under the Office of the Chief Engineer. Under the Fourth Highway Project, this Division supervised the asphalt surfacing of the Jimma-Agare and Nazareth-Awash roads, using Ethiopian staff exclusively. The result was not entirely satisfactory, and short sections of the Jimma-Agare road were rebuilt due to deficiencies in supervision. The IHA has agreed that foreign consultants will assist the Contract Construction Division in the supervision of the road construction and surfacing work to be financed under the Fifth Highway Project.

Most all-weather road construction in Ethiopia has been carried out by foreign contractors or by IHA force account. The latter has generally been inefficient and has diverted funds, manpower, and equipment from needed road maintenance work. There are local contractors who could expand into road construction, but they generally lack experience in pricing, administration, and have difficulty in financing equipment purchases and working capital requirements. The World Bank IDA credit will include funds for the training of local contractors and for the purchase of

equipment under loans to be administered by the Agricultural and Industrial Development Bank (AIDB). During negotiations, the World Bank Group and AID will also seek an IEG and IMA commitment to the eventual phase-out of IMA force account construction of all-weather roads.

In the past, the IMA had a Provincial Roads Division assisting provincial and sub-provincial (awraja) governments in the design and construction of rural dry-weather roads. This division was replaced under the FAE reorganization by the Direct Labor Construction Division. However, little rural road construction is being undertaken except in conjunction with various externally aided projects (Wood for Work, Chilalo Agricultural Development Unit, Wolamo Agricultural Development Unit, etc.). The IMA is willing to assist in this area but is reluctant to do so in the absence of a coordinated government program which would fix the responsibility for survey and design, construction, maintenance and financing of rural roads. The IEG, under the leadership of the Planning Commission Office (PCO), has been considering ways to carry out a rural roads development program but has not reached a final decision. The IDA credit will finance the services of the experts to assist the PCO in devising and carrying out such a program.

3. IHA Road Maintenance Operations

Road Maintenance is performed by the Maintenance Branch of the Operations Division, under the supervision of the Chief Engineer. The Maintenance Branch supervises the work of the nine districts, each of which is divided into several sections. Each section is responsible for the maintenance of an average of about 42 kilometers of asphalt road, and 94 kilometers of gravel road. The Maintenance Branch presently operates 930 pieces of major and supporting maintenance equipment, assigned as indicated in the following table:

Table 1: IHA Maintenance Districts

<u>Districts</u>	<u>Headquarters</u>	<u>Sections</u>	<u>Kilometers of Road</u>			<u>Pieces of Equipment</u>
			<u>Asphalt</u>	<u>Gravel</u>	<u>Worth</u>	
Shoa	Alem Gana	13	1015	920	20	377
Wollo	Kimbocha	8	350	610	25	139
Tigre	Adigrat	4	30	570	25	98
Harrar	Dire Dawa	5	50	369	395	135
Yagimder	Condar	5	15	570	25	62
Oromia	Shashemane	8	140	843	25	35
Kaffa	Jimma	4	150	31	25	77
Benishangul	Asmara	7	350	431	25	103
Goffam	Debre Markos	3	---	500	52	49
	<u>Total</u>	<u>57</u>	<u>2678</u>	<u>5341</u>	<u>526</u>	<u>930</u>

During the preliminary discussions of the Fifth Highway Project, the World Bank suggested that IHA commission a study of its road maintenance operations, as a basis for determining maintenance equipment requirements over the next five years. The World Bank, could only offer to finance the study under the Fifth Highway Project credit but the IBRD agreed to include funds under the credit for urgently needed maintenance equipment if the Road Maintenance Study could be financed earlier by some other agency. AID agreed on this basis to finance a six-month study, which began in late April 1972 and is being carried out by Frederic R. Harris, Inc., a U.S. consultant. The study will classify all IHA roads according to the economically optimal degree of road maintenance and will develop a five-year plan of routine maintenance and rehabilitation, together with projections of the plan's financial, manpower and equipment requirements and recommendations for the efficient implementation of the plan. While any decisions concerning major technical assistance inputs will have to await the completion of the study in October 1972, it is clear that the Operations Division's quarrying, rock crushing and asphaltting operations are a major bottleneck to improved road maintenance and that assistance is needed in improving the utilization of road maintenance equipment. The IDA credit will finance under the proposed Fifth Highway Project services of two experts in road maintenance operations and maintenance equipment utilization (2 man-years each).

The IBRD will require as a condition of the IDA credit, that the IEG and IHA agree to present a plan for implementing the recommendations contained in the final Report of the Road Maintenance Study within a time schedule to be determined during the negotiations between the IBRD and the IEG.

The proposed procurement of urgently needed road maintenance equipment is discussed in Section II.D below.

4. IHA Equipment Maintenance Operations

Maintenance of IHA's highway equipment is the responsibility of the Supplies and Equipment Division, which is divided into an Equipment Branch, Procurement Branch and Warehousing Branch. Policies and procedures manuals for each of the branches were prepared by PAS. The recommended procedures for the Procurement Branch and Warehousing Branch have been adopted and implemented throughout the IHA, and an electronic data processing system has been established for spare parts inventoring and control. The recommended procedures for the Equipment Branch, including the equipment management reporting system, have been introduced at the component rebuild shop and at the Alem Gana district shop on a pilot basis and are scheduled to be introduced at the remaining eight district shops with the assistance of the U.S. shop technicians before the end of 1972.

C. Asphalting Project

1. General

The proposed asphalting project consists of new aggregate base and bituminous surface treatment on three existing gravel roads built to primary road standards. The Lekemпти-Ghimbi and Agaro-Bedelle roads were initially built under the IHA Third Highway Program (1962-68), with IBRD and AID assistance. The Wolisso-Jimma Road (on the same trunk route as the Agaro-Bedelle Project) was reconstructed under the IHA First Highway Program (1951-57).

2. Design

The road construction under these projects conforms to IHA standards (American Association State Highway Officials, AASHO, Standards) for primary roads in Ethiopia and are a part of the trunk routes (with similar standards) connecting Addis Ababa and the Ethiopian Port of Assab on the east. These standards call for a crushed aggregate base of 26 feet (8 m) width, with a double surface asphalt treatment of 23 feet (7 m) width providing a gravel shoulder of 1.5 feet (.5 m) on each side.

The project design provides a roadway foundation of variable crushed aggregate base of 11 to 14 inches (28 to 36 cm) thickness for the Lekemпти-Ghimbi and Agaro-Bedelle sections and an 8 inches (20 cm) telford stone sub-base underlying a 6 inches (15 cm) crushed aggregate base on the Wolisso-Jimma section. Roadway design is based on a 20,000-pound axle load.

The project also includes the minor repair and modification of existing drainage structures (as required) with existing drainage structures and bridges meeting (AASHO) H-20-S-16 loading requirements.

The three projects are designed for a double bituminous surface treatment based on "least cost" stage construction. The life of any bituminous surface is dependent upon traffic, weather, the stability of the base construction and the capability of the IHA organization to perform adequate routine and periodic maintenance. The double-bituminous surface will last for up to 20 years, with careful maintenance carried out on a regular basis and periodic resealing.

3. Drainage Structures

The projects provide for minor repair of existing drainage structures on the Lekemпти-Ghimbi and Agaro-Bedelle sections. The drainage structures were designed and built to primary road standards.

under the initial construction program (1962-68) and have proved to be adequate since completion.

The Wolisso-Jimma road utilizes existing drainage structures (Italian masonry type) which have proved adequate over the past 20 years. However, all major bridges were initially built to a width of only 5 meters. The project provides for the extension of culverts, but since it is not economically feasible to widen or replace major bridges, the project will include the placement of approach signs and reflective striping of parapets to provide adequate warning for narrow bridges.

4. Present Condition

The existing roads were initially constructed to modern design standards regarding alignment and gradient. The roads generally traverse rolling countryside, although the Wolisso-Jimma road passes through the Gibe River Gorge. However, the horizontal and vertical alignments are built to IHA primary road standards throughout. The general condition of all three roads with respect to embankment condition, side drainage, and cut-sections is satisfactory.

5. Maintenance

The routine maintenance of the Wolisso-Jimma and Agaro-Fedelle roads will be the responsibility of existing section camps supported by the Kaffa District shop at Jimma; the routine maintenance of the Akempsi-Chimbi road will be the responsibility of section camps supported by the Shoa District Shop at Alcm Gana.

Given the other AID and IBRD-supported activities relating to IHA road maintenance activities and assurances received from the IEG regarding the implementation of the recommendations of the Road Maintenance Study, these sections and districts should have a fully adequate road maintenance capability by the time the projects are completed.

6. Technical Studies

Traffic studies, feasibility reports, engineering cost estimates and typical section designs for all the Fifth Highway Projects were carried out by the IHA and are generally adequate. Final review of all plans, designs and IFB documents for the three asphaltting projects financed by AID will be done by a U.S. consultant as part of the consultant services contract for construction supervision of the work.

7. Construction Cost Estimates

Estimates for unit prices and quantities were prepared by the Design Division of IHA, based on two asphalt surfacing projects which have recently been completed (Jimma-Agaro, Nazareth-Awash). These estimates have been reviewed by IERD and AID and found to be reasonable and acceptable.

The detailed construction cost estimates are set forth in Annex V. A summary of the construction cost estimates is as follows:

Table 2: Construction Cost Estimates: Asphaltting Projects

	US \$	Local	Total
	(\$000)		
Wolisso-Jimma	3202	1613	4815
Agaro-Bedelle	973	490	1463
Lekempti-Ghembri	845	425	1270
Sub-total	5020	2528	7548
10% Physical Contingency	502	253	755
Sub-total	5522	2781	8303
15% Price Escalation	829	417	1246
Sub-total	6351	3198	9549
Engineering Supervision (including 5% contingency)	425	450	875
Subtotal Road Surfacing	6776	3648	10424

The construction cost per kilometers is \$21,600 for the Wolisso-Jimma road, \$15,400 for the Agaro-Bedelle road, and \$11,500 for the Lekempti-Ghembri road. The difference between the per-kilometer costs of the Agaro-Bedelle and Lekempti-Ghembri surfacing projects reflects the heavier traffic on the Agaro-Bedelle road, which has resulted in greater loss of crushed material on that section. The Agaro-Bedelle section will require an additional 10 cm of crushed material, whereas the Lekempti-Ghembri section will require only 5 cm. The per-kilometer cost of surfacing the Wolisso-Jimma section is higher than either of the above, since it is in the poorest condition and will require major rehabilitation prior to application of the asphalt.

8. Engineering Cost Estimates

Engineering service cost estimates were based on engineering service costs for present IHA projects of a similar nature. U.S. consultant service costs were based on recent (1970) cost figures for consultant service contracts on AID-financed projects in Ethiopia. Consultants man-months are based on estimated project construction time, plus six man-months for IEB review.

The IHA will provide the additional staff of inspectors, assistant project engineer, materials and testing, engineering service vehicle, housing and rations.

The estimated cost of U.S. consultant services to be financed under the loan is as follows:

	<u>US \$</u>
Review of IFB documents (6 man-months)	45,000
Lekempti-Chimbi ((30 man-months)	120,000
Agaro-Bedelle (
Wolisso-Jimma (32 man-months)	240,000
	<u>405,000</u>
5% Contingency (supervision only)	20,000
US \$	<u>425,000</u>

The estimated cost of the engineering service to be provided by the IHA Contract Construction Division plus contingencies is U.S. \$450,000. The total project cost of engineering services is \$875,000.

9. Technical Soundness

The plans and specifications prepared by the IHA for the Fifth Highway Project have been reviewed in detail by A.I.D. engineers and found to be based upon acceptable engineering principles consistent with road facilities desired by the IEG and considered technically feasible by A.I.D. The preliminary cost estimates were jointly reviewed by the IHA and A.I.D. and found to be reasonable.

The ability of the IEG, through the IHA, to support this project, both through construction and subsequent maintenance requirements, have been examined thoroughly in light of past performance and on-going A.I.D. and IBRD-supported programs. This project is sound, reasonable and within the capability of the IEG to successfully implement.

F. Road Maintenance Equipment

Over the past 20 years, the IHA has acquired an inventory of some 2,200 units of highway equipment and supporting equipment. The majority of this equipment was purchased during the First and Second Highway Programs (1950-63), particularly under a US loan of \$3.6 million (DLF loan 193) authorized in 1961. No subsequent loans have been made to the IHA by international lending agencies for the procurement of road maintenance equipment, although the IHA was able to use most of the special Letter of Credit made available thru the local cost financing for the Third Highway Project (AID Loan No. 663-H-007) to procure maintenance equipment in 1965-68. After IHA requested AID financing for a \$14 million equipment program in 1967, AID commissioned a consultant to evaluate IHA's capability for the maintenance and operation of existing highway equipment and to determine the need for additional equipment. The consultant's report was submitted in February, 1969, and recommended that highest priority be given to the provision of shop tools, spare parts, and technical assistance to assist the IHA in repairing equipment and in improving its equipment maintenance capability. On this basis, a loan in the amount of U.S. \$3.5 million Highway Equipment Repair Facilities Project, A.I.D. Loan No. 663-H-017, was authorized in October 1969, and executed in March 1970.

As a result of the implementation of this project and the introduction of a new equipment management system into the IHA by PAS, it became evident that the IHA had a considerable number of over-age and obsolete highway equipment units. Starting in 1970, an equipment condition survey was instituted, taking into account age, service life remaining, and repair cost. This has resulted in the retirement over 400 units of IHA equipment, reducing the IHA inventory to 1,835 units as of March 1972, including 1258 major units and 577 supporting units.

1. IHA Equipment Inventory

The IHA equipment inventory shows a total of 1,835 units (as of May 1, 1972) of operable and repairable equipment available for use. The assignment of this equipment within the IHA system falls into the two major categories, routine road maintenance operations and force account construction as noted below:

Table 3: IHA Highway Equipment Assignments - May 1, 1972

Maintenance operations, 9 IHA districts:		
Major units		743
Minor units		<u>187</u>
	Sub-total	930
Force Account Construction Projects and other		
Major units		515
Minor units		<u>390</u>
	Sub-total	905
	Total	1,835

Maintenance equipment assignments by district are as follows:

Table 4: Maintenance Equipment Assignment by IHA District

<u>Major Equipment</u>	<u>Aleggana</u>	<u>Asmara</u>	<u>Shahemane</u>	<u>Kembolcha</u>	<u>Jimma</u>	<u>Gondar</u>	<u>Adigrat</u>	<u>Dire Dawa</u>	<u>Debre Markos</u>	<u>TOTAL</u>
Dozers	21	2	5	4	5	3	3	5	-	58
Loaders	10	3	1	4	2	3	3	5	2	33
Graders	26	10	12	14	15	9	10	9	6	121
Rollers	21	7	8	4	6	6	1	9	6	68
Lowbed	-	1	-	2	-	-	-	2	-	5
Dump Truck	82	21	25	30	22	14	18	30	18	260
Pickup	17	15	3	10	2	3	3	4	1	58
Water/fuel Trucks	4	-	-	2	3	-	-	-	1	10
Flatbed	5	4	-	2	-	-	-	-	-	11
Shop Truck	2	-	-	1	-	-	-	-	-	3
Truck-Tractor	1	4	-	3	-	-	-	2	-	10
Van	4	-	-	-	-	-	-	-	-	4
Crusher	12	6	10	7	4	3	5	2	3	52
Asphalt Spreader	-	-	-	-	-	-	-	1	-	1
Asphalt Heater	7	16	2	18	-	-	2	1	-	46
Asphalt Mixer	-	2	2	2	-	1	-	1	-	8
Asphalt Distributor	6	2	-	2	-	-	-	1	-	11
Scraper	2	-	-	-	1	1	-	-	-	4
Sub-total	220	93	68	105	60	43	45	72	37	743
Minor & Supporting Equipment	<u>57</u>	<u>16</u>	<u>17</u>	<u>24</u>	<u>17</u>	<u>18</u>	<u>13</u>	<u>13</u>	<u>12</u>	<u>187</u>
Total	277	109	85	129	77	61	58	85	49	930

Equipment Requirements

As noted above, much of IHA's equipment inventory, including equipment assigned to road maintenance, is overage and is approaching the end of its economic life. The following table illustrates the age of seven major types of road maintenance equipment now owned by IHA:

Table 5:

	Total No.	Year Purchased				Average Age (Years)	Standard Life 1/
		50-55	56-60	61-65	66-70		
1. Dump Trucks	396	41	137	141	77	9	6
2. Graders	152	7	31	88	26	10	3
3. Rollers	82	5	34	40	3	9	10
4. Loaders	50	2	8	14	26	9	7
5. Pick-up	166	2	4	73	87	9	6
6. Crushers	62	21	17	23	1	12	8
7. Dozers	79	4	13	52	10	8	9
	<u>987</u>						

In early 1971, the IHA requested that the World Bank consider an extensive program of highway equipment replacement under the Fifth Highway Program. Since most of the equipment was to be assigned to road maintenance, the World Bank suggested that IHA undertake a study to develop a five-year road maintenance program, to be the basis for determination of maintenance equipment requirements. IHA agreed, and asked AID to finance the study, since alternative financing would not be available for a long time. A consultant was engaged, and the study was started in March 1972.

As part of this study the consultant was to prepare a listing of road maintenance equipment units needed urgently to support the present IHA road maintenance operation. The consultant submitted the recommended listing of maintenance equipment units in early May. This listing was based on the fact that most of the IHA road maintenance equipment has exceeded its life expectancy and is not reliable enough to be utilized for extended periods of service for needed maintenance work. The consultant recommended the procurement of 299 units of equipment at an estimated cost of U.S. \$5.5 million.

It was determined, in reviews of this listing by USAID and IPRD representatives, that adequate justification for 299 units equipment to undertake the type of road maintenance program specified was not fully documented at this point of study and therefore, pending completion of the study, it would be necessary to reduce this recommended listing to a level supportable by known and established conditions. Using the consultant's basic information, supplemented by data developed by the IHA Supplies and Equipment Division, AID, IPRD, and IHA representatives prepared a more detailed representation of equipment replacement needs.

1/ Average useful economic life (years) by standards established by IAS for the IHA equipment management program.

While some overage equipment is actually in relatively good condition due to low past utilization, it is anticipated that the rate of utilization and the consequent rate of retirement of highway equipment will accelerate over the next two years as a result of substantial recent improvement in equipment maintenance. The equipment deadline rate has been reduced to 1% (85% availability), which has greatly reduced deadline time for individual units of equipment and increased equipment utilization. This will result in equipment reaching the end of its economic life at much faster rate than previously. It is expected that not less than 10% of the existing IHA major units of equipment will be retired annually over the next two years, resulting in a further reduction of available maintenance equipment by some 50 major units.

IBRD, IHA, and USAID representatives have examined the priority equipment replacement needs of the IHA in light of the Phase II (priority replacement) Road Maintenance Study Report; the HERF Project accomplishment and Monthly Reports; IHA studies; and USAID site evaluations and conclude that a first tranche financing of priority replacement road maintenance equipment is urgently needed by the IHA.

These basic equipment replacement needs are set out in Annex VI and further verified by the illustrative table below:

ESTIMATED RETIREMENT RATE OF IHA EQUIPMENT

Type	(May 1972) Total	5%* 1972	10%* 1973	15%* 1974	Estimated Replacement Needs	To be Procured Under the Loan
1. Dump Trucks	396	15	40	60	115	30
2. Graders	152	7	15	20	42	15
3. Rollers	32	4	8	12	24	0
4. Loader	50	3	5	8	16	5
5. Pick-ups	166	8	17	20	45	12
6. Crushers	62	3	6	10	19	1
7. Dozers	79	3	8	12	23	0
	<u>987</u>				<u>284</u>	<u>63</u>

Given Equipment Inventory	987 units
Estimated equipment retirement	284 units
Estimated equipment retained	703

AID procurement	63
Final inventory	766 - or a 22% decrease

* The above retirement rates of equipment are based on an estimation made by the AID HERF/IHA Project Manager on the basis of equipment condition reports from his field team. These percentages rates are stated to be on the low side for graders, loaders, pick-ups and crushers.

The number of loan-procured units of equipment listed above and in Annex VI are subject to adjustment pending receipt of the final report of the Road Maintenance Study. During the implementation of the loan sufficient time is provided to make these adjustments prior to procurement actions.

Although the above table indicates a much greater need for priority equipment replacement than will be provided by the loan, it is anticipated that the findings of the Road Maintenance Study will recommend redistribution of equipment throughout the IHA Districts to close a portion of this equipment gap. Below are summarized the financial requirements for the equipment.

Emergency Maintenance Equipment Requirements

Equipment	2,000	---	2,000
Spare Parts (10%)	200	---	200
Procurement	<u>75</u>	---	<u>75</u>
Sub-total	2,275		
Contingency	<u>225</u>	---	<u>225</u>
Sub-total			
Equipment	2,500		2,500

III. Economic Analysis

A. Transport and the Ethiopian Economy

Ethiopia is one of the largest countries in Africa, with an area about twice the area of France and a population of 25 million. Its topography is dominated by a vast mountainous plateau with a mean altitude of 2,000 meters, cut diagonally from southwest to northeast by the Rift Valley. The plateau areas generally receive high rainfall, resulting in a large number of rivers flowing down to the lowlands through deep valleys and gorges. These topographical and climatic conditions have made the provision of communications and transport facilities difficult and costly. Consequently, most of the country and its 25 million population has remained remote from the influence and benefits of modern transportation, and much of Ethiopia's agricultural and other potential has been only minimally developed. According to a recent IBRD report, "it is probably true that the potential need for better communications, and particularly for local feeder and access routes in the rural areas, is greater in Ethiopia than anywhere else in the continent at the present time."

Ethiopia's present transport facilities are strongly focused around the capital, Addis Ababa, and its links with the coffee-producing areas of the west and southwest, the seaports of Assab and Djibouti, and Asmara. The most heavily travelled long-distance road route is the 860-km. road between Addis Ababa and Assab. The most important of Ethiopia's two railways connects Addis Ababa to Djibouti (about 780 km); the other railway connects Asmara and northwestern Ethiopia with the Port of Massawa (about 300 km). The three seaports each handle about one-third of Ethiopia's foreign trade. Djibouti has been losing ground to Assab and will probably become even less important with the completion of the World Bank-financed Awash-Tendaho road, which will provide an all-asphalt low-level route between Addis Ababa and Assab. Domestic air transport is provided by Ethiopian Airlines, which serves three international airports in Ethiopia (Addis Ababa, Asmara, Dire Dawa), and forty-three domestic airports. Ethiopian Airlines intends to curtail its domestic service as the road system is developed.

The bulk of Ethiopia's investment in infrastructure has been concentrated on development of the all-weather road system. Most of this investment has been directed toward expansion of the primary road system radiating out from Addis Ababa. While this system is now relatively adequately developed, there are few secondary roads connecting the radial links, and almost a complete absence of feeder and farm-to-market roads.

There has also been a tendency to concentrate on new construction at the expense of road maintenance; this has been primarily a result of deficiencies in equipment maintenance and utilization rather than unwillingness to allocate funds for maintenance, since budgeted expenditures for road maintenance have generally been adequate (about \$800 per kilometer in FY 1972).

These problems are recognized in the Fifth Highway Project. The Program includes the upgrading of the two major coffee-export routes and the construction of 440 kilometers of feeder road, but no primary road construction. The Project also includes the provision of two experts to assist the IEG Planning Commission Office in its efforts, begun in late 1971, to develop a program for the rapid construction of a network of low-cost rural roads. With respect to road maintenance, the Fifth Highway Project includes procurement of urgently needed road maintenance equipment, as recommended in a preliminary report by the U.S. consultant, Frederic R. Harris, Inc., carrying out the IHA Road Maintenance Study and the provision of technicians to assist the IHA in improving the utilization of road maintenance equipment. The extension of the technical assistance under the AID Highway Equipment Repair Facilities Project will support the goal of improved road maintenance by assisting in the strengthening of IHA's capability to adequately repair and maintain its road maintenance equipment.

B. Road Transport

1. Growth of the Road System

At the time of the Italian invasion in 1936, there were about 1,200 km of all-weather road in Ethiopia (not including Eritrea). During the Italian occupation, about 6,000 km of all-weather road were built, but following the expulsion of the Italians in 1941, construction stopped and the all-weather system was allowed to deteriorate. By 1950, only about 2,000 km remained passable in the wet season, and most of these roads were in very poor condition.

The IEG began a road reconstruction and rehabilitation program in 1950, with assistance from the First World Bank loan to Africa, and established the Imperial Highway Authority in 1951. Under the First Highway Program (1951-1957) the IHA reconstructed the roads most essential for Ethiopia's coffee exports (Jirma-Addis Ababa, Leketpi-Addis Ababa, Addis Ababa-Assab). Under the Second, Third and Fourth Highway Programs, IHA reconstructed major routes leading north, east and south from Addis Ababa, extended the primary system further into the coffee-growing areas of western and southwestern Ethiopia, and constructed a low-level route linking Addis Ababa with Assab via the Awash Valley (see Map, Annex II and Annex III, IERD and AID, Assistance to the IHA). As a result of these programs and of IHA road construction by force account outside of the First through Fourth Highway Programs, Ethiopia's network of all-weather roads approximately doubled in length during the 1950's and doubled again in the 1960's:

Table 5: Ethiopia's All-weather Road System
(kilometers)

Year	<u>All-weather Roads</u>				<u>Other</u>	<u>Total</u>
	<u>Asphalt</u>	<u>Gravel</u>	<u>Earth</u>	<u>Total</u>		
1950-51	.	2000	-	2000	21,000	23,000
1957-58	780	1875	-	2655	20,345	23,000
1960-61	935	3000	-	3935	19,065	23,000
1965-66	1526	3773	451	5755	17,245	23,000
1970-71	2078	5341	626	8045	14,955	23,000

Source: IHA

The reconstruction and expansion of the all-weather road system has allowed significant reductions in road-user costs. Because Ethiopia's road transport industry is highly competitive, these cost savings have generally been passed on through reductions in freight rates, which are among the lowest in Africa.

2. Traffic Growth

The expansion of the all-weather road system has been accompanied by growth in vehicle registration and traffic. Motor vehicle registration increased from about 8,000 in 1953 to 18,890 in 1961 and 42,227 in 1970:

Table 6: Motor Vehicle Registration, 1961-1970

<u>Year</u>	<u>Cars</u>	<u>Buses</u>	<u>Trucks</u>	<u>Pickups</u>	<u>Tractor Trailers</u>	<u>Total</u>
1961	12,802	812	2,375	2,060	841	18,890
1965-66	27,644	2,291	2,071	2,171	1,705	35,882
1969-70	31,162	3,099	2,857	3,041	2,068	42,227

Although vehicle registration only increased by about 4% per year over the five years 1965-1970, traffic growth has been substantially more rapid, as indicated by the average annual fuel consumption increase of about 13% per year over the five years, 1965-1970. (Vehicle fuel consumption is probably a more accurate indicator of overall traffic growth than extrapolations from average daily vehicle counts on individual roads.)

C. Benefit-Cost Analysis: Asphaltting Projects

1. General

The three roads proposed for asphalt surfacing are all part of the primary road network extending from Addis Ababa into the rich coffee-producing areas of western and southwestern Ethiopia. The Wolisso-Jimma road covers about two-thirds of the distance between Addis Ababa and Jimma, and was reconstructed to general standards in the early 1950's under the First Highway Project. (The first third of the road, from Addis Ababa to Wolisso, was reconstructed with asphalt surfacing and is still in relatively good condition.) Jimma is the capital of Kaffa Province and the major coffee-marketing center for all of southwestern Ethiopia. Consequently, traffic on the Addis Ababa-Jimma road is heavy and, in 1970, exceeded 200 vehicles per day. The construction under the Fifth Highway Project of the Agaro-Abera-Chira road (48 km) and the Bonga-Mizan Teferi road (79 km) should generate substantial additional traffic for the Wolisso-Jimma road.

The road from Jimma north to Agaro (45 km) was constructed to gravel standards under the Second Highway Project and surfaced under the Fourth Highway Project. The Agaro-Bedelle Road was constructed to gravel standards under the Third Highway Program and completed in May 1968. By 1971, average daily traffic reached 197 vehicles. Traffic should continue to increase rapidly as a result of the completion in December 1972 of the all-asphalt bedelle-Metu Road, which is being constructed under the Fourth Highway Project. With the asphalt surfacing of the Agaro-Bedelle section, coffee exporters will be able to ship coffee from Metu and Bedelle in Illubabaor to Jimma, Addis Ababa and Assab entirely on asphalt road, with the exception of a short stretch near Assab. (The Awash-Tendaho road connecting Addis Ababa with Assab via the Awash River Valley is to be completed in June 1973.)

The Leketpi-Ghimbi Road was constructed under the Third Highway Project and completed in March 1968. It links Leketpi, the capital of Wollega Province, with Ghimbi, the marketing center for coffee produced in western Ethiopia. The road from Leketpi to Addis Ababa is primary road in relatively good condition; the first 125 kilometers from Addis Ababa to Ambo is asphalt surfaced, while the

remaining 200 kilometers to Lekempti is gravel. Traffic in 1971 on the Lekempti-Ghimbi section averaged 111 vehicles per day. The extension of all-weather roads northwest from Ghimbi to the Sudan border at Kurmuk (presently being constructed by IHA forces) and south west to Dembidollo and Gambela (proposed for the Sixth Highway Project and now being surveyed) should result in rapid traffic growth on the Lekempti-Ghimbi Road.

2. Benefits

The benefits accruing to the Ethiopian economy from the upgrading and asphalt surfacing of the three major roads fall into two categories: reduced vehicle operating costs due to the improvement of the surface from gravel to asphalt, and reduced road maintenance costs due to the generally lower annual cost of maintaining asphalt-surfaced roads in Ethiopia.

Reductions in both vehicle operating costs and road maintenance costs are a function of projected traffic volumes by major types of vehicles. Traffic projections for each of the three roads may be built up using the following IHA traffic counts and the traffic growth projections developed under the UNDP-financed Ethiopian General Road Study (GRS) ^{1/}:

^{1/} The General Road Study was prepared by British consultants under UNDP financing, with the World Bank as executing agency.

Traffic Counts and Projections, 1971-1998

<u>Road</u>	<u>Vehicle Type</u>	<u>ADT 1971</u>	<u>Projected Growth Rates (% per annum)</u>		
			<u>1970-78</u>	<u>1978-88</u>	<u>1988-98</u>
Wolisso-Jimma	Cars	80	7	7	6
	Buses	65	3	3	3
	Trucks	62	8	7	6
	Trucks/Trailers	<u>17</u>	10	8	6
	Total	224			
Agaro-Bedelle	Cars	73	8	9	9
	Buses	48	5	7	8
	Trucks	55	6	7	8
	Truck /Trailers	<u>9</u>	5	7	8
	Total	185			
Lekemti-Ghimbi	Cars	22	10	10	8
	Buses	35	10	10	8
	Trucks	46	9	9	8
	Truck /Trailers	<u>8</u>	10	10	6
	Total	111			

SOURCE: GRS, Volume 5, Section III

Traffic figures by vehicle type are projected over the assumed 20-year life of the roads, using the base-year traffic counts and projected percentage growth rates. To estimate reductions in transport costs (vehicle operating costs), the traffic figures are multiplied by the estimated cost savings per kilometer for each type of vehicle using the road in question. These figures multiplied by 365 give the estimated annual vehicle operating cost savings per kilometer due to improvement from gravel to asphalt surfacing. The estimated cost savings per kilometer by vehicle type are as follows:

Cost Savings Due to Improvement from Gravel to Asphalt Surfacing
(US \$ per Kilometer)

Surface Type	Cars		Busses		Trucks		Truck/Trailers	
	R	H	R	H	R	H	R	H
Gravel	.0361	.0374	.10	.122	.20	.239	.352	.513
Asphalt	.0287	.0300	.083	.096	.161	.196	.287	.426
Saving	.0074	.0074	.017	.026	.039	.043	.065	.087

R-Rolling Terrain

H-Hilly Terrain

Source: GRS, Volume 7

To illustrate, a truck/trailer travelling the 223 kilometers from Wolisso to Jimma can save an estimated U.S. \$19.40, in vehicle operating costs if the road is upgraded from gravel to asphalt. Given 1971 traffic volumes (17 truck/trailers per day), the total savings to truck/trailer operators would be U.S. \$329.80 per day, or U.S. \$120,377 per year. Road user savings calculated on this basis increase from U.S. \$642,035 in the first year following completion of the asphaltting project to U.S. \$2,111,525 in the twentieth year. (For the calculations of road user benefits by vehicle type and by year, see Annex VII).

To estimate savings in road maintenance costs, annual average daily traffic (AADT) is multiplied by a variable cost coefficient and the resulting figure is added to a fixed cost figure to find total road maintenance costs per kilometer. Fixed road maintenance costs are those which are not dependent on traffic, such as shoulder grading, and draining of drainage structures and ditches. Variable road maintenance costs are those which depend on traffic volume and have primarily to do with surface condition. Asphalt roads are generally characterized by high fixed maintenance costs and low variable costs, while gravel roads are generally characterized by low fixed costs and high variable costs. The fixed and variable maintenance costs for asphalt and gravel primary roads in Ethiopia, as estimated in the General Road Study, are as follows:

Fixed and Variable Road Maintenance Costs Per Kilometer
(U.S. \$)

Surface	Fixed Cost	Variable Cost
Gravel	341 +	5.40 AADT
Asphalt	1,017 +	0.76 AADT

SOURCE: GRS, Volume 5, Section VII

Whether surfacing a gravel road with asphalt leads to reduced maintenance costs depends, of course, on traffic volume. Using the above formulas, it is more expensive to maintain asphalt roads at any AADT up to 170 but less expensive to maintain asphalt roads at any higher AADT. Both the Wolisso-Jimma and Agaro-Bedelle roads had daily traffic in excess of 170 in 1971; daily traffic on the Lekemti-Ghimbi road is projected to reach 170 by 1976, or two years after the scheduled completion of the asphalt surfacing. (For the calculations of road maintenance cost savings by year, see Annex VII.)

3. Costs

Since costs of maintaining the asphalt roads have been included in the calculation of road maintenance cost savings above, the only costs which must be taken into account in the benefit/cost calculation are the capital costs of upgrading and surfacing each of the roads including the cost of supervision. For the purpose of the analysis, it is assumed that the Agaro-Bedelle and Lekemti-Ghimbi projects will be completed in two years, and that 30% of the costs will be incurred in the first year and the remaining 70% in the second year. For the Wolisso-Jimma road, it is assumed that the upgrading and surfacing will require three years and that 20% of the costs will be incurred in the first year, 30% in the second year, and 50% in the third year. Based on the cost figures presented in Section II C above, the costs by year will be as follows:

Project Costs by Year (U.S. \$ Millions)

<u>Road</u>	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Total</u>
Agaro-Bedelle	\$ 613	\$1,431		\$2,044
Lekemti-Ghimbi	550	1,283		1,833
Wolisso-Jimma	\$1,309	\$1,964	\$3,274	\$6,547
Total (including contingencies)				\$10,424

4. Benefit/Cost Analysis

The benefit/cost ratio and the Internal Economic Return (IER) for each of the roads are as follows:

<u>Road</u>	<u>Discounted Value at 10% (\$000)</u>		<u>Benefit/Cost Ratio</u>	<u>IER</u>
	<u>Benefits</u>	<u>Costs</u>		
Agaro-Badelle	\$2,489	\$1,740	1.43:1	13.9%
Lekempti-Ghimbi	\$2,552	\$1,560	1.64:1	15%
Wolisso-Jimma	\$8,539	\$5,273	1.62:1	15.6%

As shown above, the benefit/cost ratios are substantially positive at a 10% discount factor, and the IER's are 13.9% for Agaro-Badelle, 15% for Lekempti-Ghimbi, and 15.6% for Wolisso-Jimma. Thus it is demonstrated that all three roads are economically justified. (For details of the analysis, see Annex VII.)

D. Economic Benefits: Road Maintenance

The purchase of emergency road maintenance equipment is an investment in adequate or improved road maintenance, and as such the economic benefits of maintenance equipment purchases may be viewed in terms of the benefits attributable to road maintenance. These benefits include savings in vehicle operating costs, savings in future road rehabilitation or reconstruction costs, and savings in future road maintenance costs. Although no analysis of road maintenance benefits and costs is available at present, the scope of work of the Road Maintenance Study required that the Consultant present a benefit/cost analysis of the proposed five-year road maintenance program and that recommended equipment purchases be based on this analysis. As noted in Section II D above, the actual procurement of maintenance equipment under this loan will be deferred until the completion of the Consultant's draft final report. This will ensure that the list of urgently needed equipment items is consistent with the Consultant's assessment of the IHA's overall maintenance equipment requirements.

IV. Financial Analysis

A. Financial Requirements

The total estimated financial requirements of the Fifth Highway Project broken down into IBRD financial components and A.I.D. financed are as follows:

<u>IBRD Components</u>	<u>FX Costs</u>	<u>Local Costs</u>	<u>Total</u>
Construction six gravel roads	\$ 8,667,000	\$ 5,778,000	\$14,445,000
Construction Supervision	800,000	700,000	1,500,000
	<hr/>	<hr/>	<hr/>
	\$ 9,467,000	\$ 6,478,000	\$15,945,000
10% Physical Contingency	946,700	647,800	1,594,000
	<hr/>	<hr/>	<hr/>
Sub-Total	\$10,413,700	\$ 7,125,800	\$17,539,500
15% Price Escalation (Construction only)	1,300,000	867,000	2,167,000
Road Construction Sub-Total	\$11,713,700	\$ 7,992,800	\$19,706,500
Advisory Services and Technical Assistance	623,000	109,000	732,000
Contingencies 10%	62,300	10,900	73,200
	<hr/>	<hr/>	<hr/>
Sub-Total	685,300	119,900	805,200
Research, Training Equipment & Supplies	196,000	4,000	200,000
Contingencies Physical 10%	19,600	400	20,000
Price Escalation 15%	29,400	600	30,000
	<hr/>	<hr/>	<hr/>
Sub-Total	245,000	5,000	250,000
Loans for Local Contractors	1,500,000		1,500,000
IBRD Total	\$14,144,000	\$ 8,117,700	\$22,261,700

<u>A.I.D. Components</u>	<u>FX Costs</u>	<u>Local Costs</u>	<u>Total</u>
Asphalt Surfacing Three Roads	\$ 5,020,000	\$ 2,528,000	\$ 7,548,000
Contingencies Physical 10%	502,000	253,000	755,000
Price Escalation 15%	845,000	417,000	1,246,000
Sub-Total	\$ 6,351,000	\$ 3,198,000	\$ 9,549,000
Construction Supervision	405,000	427,500	832,500
Contingencies	20,000	22,500	42,500
Sub-Total	\$ 425,000	\$ 450,000	\$ 875,000
Road Surfacing Sub-Total	\$ 6,776,000	\$ 3,648,000	\$10,424,000
Emergency Road Maintenance Equipment	2,000,000		2,000,000
Spare Parts 10%	200,000		200,000
Procurement	75,000		75,000
Sub-Total	\$ 2,275,000		\$ 2,275,000
A.I.D. Total	\$ 9,276,000	\$ 3,648,000	\$12,924,000
Total Fifth Highway Project	\$23,420,000	\$11,765,700	\$35,185,700

For additional details of the Fifth Highway Project costs, see Section II, C and D, and Annexes V and VI.

B. Financial Plan

1. A.I.D. Component: A.I.D. proposes to finance 65% of the total costs of the road surfacing work, and the emergency road maintenance equipment. This financing plan covers the World Bank Group estimates for

foreign exchange cost financing for these items, which A.I.D. representatives indicated during Loan negotiations with the IEG and the World Bank that A.I.D. would consider financing. Based on this formulation, A.I.D. would finance local costs if a local contractor receives the award because of the difference between IDA and A.I.D. definitions for foreign exchange financing.

The financial plan for the A.I.D. portion of the project will be as follows, assuming an A.I.D. Code 941 contractor receives the award:

	<u>Foreign Exchange</u>	<u>Local Costs</u>	<u>Total Costs</u>
A.I.D. Loan			\$ 9,276 (72%)
Road Surfacing	6,776	-	(6,776)
Road Maintenance Equipment	2,500	-	(2,500)
IEG Contribution	-	\$3,648	3,648 (28%)
Total	<u>\$9,276 (72%)</u>	<u>\$3,648 (28%)</u>	<u>\$12,924</u>

In this case, A.I.D. will finance all of the foreign exchange costs and the IEG will finance all of the local costs.

If a local contractor receives the contract award, the foreign exchange costs of the asphalt surfacing will change, and accordingly the financial plan will be as follows:

	<u>Foreign Exchange</u>	<u>Local Costs</u>	<u>Total Costs</u>
A.I.D. Loan			\$ 9,276 (72%)
Road Surfacing	\$4,245 (63%)	\$2,531 (41%)	(6,776)
Road Maintenance Equipment	2,500 (37%)		(2,500)
IEG Contribution		3,648 (59%)	3,198 (28%)
Total	<u>\$6,745 (52%)</u>	<u>\$6,179 (48%)</u>	<u>\$12,924</u>

Under this financial breakdown, A.I.D. will finance all of the foreign exchange costs and 41% of the local costs. The IEG will finance 59% of the local costs.

The proposed Loan will be for 40 years, including a 10-year grace period. Interest will be 2% per annum for the first ten years and 3% thereafter. The Loan will be made to the Imperial Ethiopian Government.

2. Total Fifth Highway Project: The financial plan for the total project is as follows:

	<u>Foreign Exchange</u>	<u>Local Costs</u>	<u>Total Costs</u>
IDA Credit	\$14,144,000(60%)	\$ 2,856,000(24%)	\$17,000,000(49%)
A.I.D. Loan	9,276,000(40%)	-	9,276,000(26%)
IEG Contribution		8,909,700(76%)	8,909,700(25%)
	<hr/>	<hr/>	<hr/>
	\$23,420,000(66%)	\$11,756,000(34%)	\$35,185,700

The IDA credit will finance 49% of the total costs, A.I.D. will finance 26% and the IEG will finance 25% as its contribution.

C. IEG Ability to Provide Local Cost Financing

The IEG experiences strong constraints, as do other developing countries in generating sufficient revenue to finance both recurrent costs and make a substantial contribution to its capital development. The total IEG expenditure budget for 1971/72 totals \$261 million, of which \$67 million is allocated for capital development. The capital figure is a substantial increase over actual levels of \$57 million in 1971, and \$49 million in 1970 which is an indication of the IEG's increasing commitment to development. A.I.D. supports this shift to development expenditures which has been discussed in detail in the Ethiopia Agriculture Sector III paper authorized earlier this year. Much of the capital development expenditure is directed to the expansion of the transportation infrastructure in that \$38 million will be spent in 1971/72 for highway construction of maintenance activities.

The IEG has become more realistic in recent years in budget estimation and budget practices in general, and accordingly the IEG has been meeting its commitments to finance its share of foreign donor financed projects. This has been demonstrated in the past year by IEG performance for Civil Aviation Improvement project (663-H-015) and Malaria Eradication project (663-H-013) where IEG payments have been made on schedule. To assure A.I.D. that this practice will continue, the Loan Agreement will contain a condition precedent to disbursement requiring the IEG to provide a description of arrangements that funds will be available on a timely basis to finance the IEG's share of the project.

D. Availability of Other Sources of Finance

Ethiopia has been successful in mobilizing financial and technical assistance from a variety of sources. Major aid donors other than the World Bank Group and the U.S. include Sweden, Germany, Italy, France, the U.K. and the UN agencies, particularly UNDP, FAO and WHO. As noted in Section I.A. above, the bulk of external financing for highway development has come from the World Bank Group, which provided \$54.7 million in loans and credits for the First through Fourth Highway Projects and is considering an IDA credit of \$17.0 million for the Fifth Highway Project. Germany has provided a \$2 million highway equipment loan and a loan for the construction of the all-weather road to Kenya (Dilla-Moyale), while Sweden provided \$5.8 million on IDA terms for the Fourth Highway Project. The U.S. extended about \$12.0 million in A.I.D. loans for road development in Ethiopia.

As mentioned in Section I.A above, the World Bank Group and the IEG requested that A.I.D. consider participating in the Fifth Highway Project after it became evident that the World Bank could not allocate sufficient IDA funds to the project. IBRD loan funds were available, but the IEG maintained that Ethiopia, as one of the least-developed of the developing countries, should not have to borrow at relatively hard IBRD terms (7-1/2%, 25 years repayment) to finance basic infrastructure development. Both the World Bank and A.I.D. concur in this position. The only other possible sources of substantial concessional financing for the Fifth Highway Project were Sweden and Germany. However, Sweden had already declined to participate in the Fifth Highway Project due to Sweden's heavy involvement in two major agricultural projects in Ethiopia. Germany indicated that it would not be prepared to provide further major financing for road construction in Ethiopia until the completion of the Dilla-Moyale project in 1974. Consequently, in view of the Fifth Highway Project's high priority and the IBRD and IEG request to A.I.D. for assistance in financing this project, A.I.D. agreed to participate with the IBRD in funding this project.

E. Ability of IEG to Repay the Loan

The IEG's outstanding foreign debt (including private loans guaranteed by IEG financial institutions) increased from U.S. \$182 million at the end of FY 1970 to U.S. \$204 million at the end of FY 1971, or by about 12 percent. It was distributed by creditors as follows:

OUTSTANDING IEG EXTERNAL DEBT, JUNE 30, 1971

	<u>U.S. \$</u> <u>(Millions)</u>
IBRD/IDA	76.3
United States	69.0
Italy	23.1
USSR	12.2
West Germany	7.2
Czechoslovakia	3.9
Sweden	3.9
Netherlands	3.5
Yugoslavia	3.1
United Kingdom	.5
Switzerland	.4
Japan	.3
Belgium	.3
	<u>203.7</u>

It may be noted that loans to the IEG from the U.S. and IBRD/IDA comprise approximately 70 percent of the total external debt outstanding.

The external debt servicing situation has improved slightly over that of FY 1971 because of the IEG decision to rely much more heavily on concessional loans and less on debt with commercial terms.

External debt servicing outlays (principal and interest) during the past five years and projected through 1978 are shown in the Table below in relation to actual and projected export earnings. In the debt service projections it is assumed that new debt will have the same terms as have characterized loan commitments to Ethiopia in 1969, 1970 and 1971. Export growth is projected at 3.1 percent, the empirically observed average annual growth rate over the past five years. Under these assumptions, the debt service ratio (ratio of debt service to exports of goods and services) is

Ethiopia's Debt Service Burden
(Eth. \$ Million)

<u>Year</u>	<u>Debt Service Principal and Interest</u>	<u>Actual Exports of Goods and Services</u>	<u>Ratio of Debt Services to Exports of Goods and Services</u>
1965	24.6	400	6.1
1966	29.0	409	7.1
1967	38.9	388	10.0
1968	45.3	438	10.3
1969	51.9	455	11.4
1970	58.4	467	12.5

	<u>Debt Service Principle and Interest ^{a/}</u>	<u>Projection Exports of Goods and Services ^{b/}</u>	<u>Ratio of Debt Service to Exports of Goods and Services</u>
1971	60	481	12.4
1972	62	496	12.5
1973	65	512	12.6
1974	66	528	12.5
1975	68	544	12.5
1976	72	561	12.8
1977	78	578	13.4
1978	81	596	13.5
1979	83	615	13.4

a/ These projections assume that the time stream of future debt-service payments per dollar of new debt is the same as that for new commitments made during 1969-71. A.I.D. estimates of total new borrowing (gross disbursements) each year are:

FY 71 US \$38 million	FY 75 US \$43 million
FY 72 US \$38 million	FY 76 US \$43 million
FY 73 US \$38 million	FY 77 US \$43 million
FY 74 US \$38 million	FY 78 US \$43 million

b/ These projections assume an annual growth of 3.1 percent in exports of goods and services, based on the empirically observed export performance of 1965-70.

projected to increase from 12.5 percent in 1970 to 13.4 percent in 1979. It should be emphasized, however, that an assumption of continued availability and use of concessional loans underlies this result. Thus, AID concessional term lending (i.e., 40 years maturity, 10 years grace, and 2 percent interest during the grace period and 3 percent thereafter) would appear fully justified and in agreement with the IBRD recommendation in its November 1971 report. The World Bank Group itself has substantially increased the share of IDA lending to about 50 percent of commitments in 1970-71, and intends to increase it more as availability of IDA funds permit. Under these circumstances, Ethiopia should be able to service its debt during the 1970's. Therefore, A.I.D. believes there is reasonable prospects for repayment of this loan.

V. Other Considerations

A. Impact on the U.S. Economy and Balance of Payments

This loan will not conflict with any U.S. business interests, nor will it have a significant adverse impact on the U.S. balance of payments, since the AID loan will finance primarily if not entirely foreign exchange costs. The U.S. balance of payments will benefit from the export of road construction and maintenance equipment and consulting and technical services which will be financed under the loan. The purchase of U.S. road maintenance equipment by the IHA will increase the degree of standardization on U.S. equipment and should lead to substantial purchases of spare parts and additional equipment from the U.S.

B. Effect on Private Enterprise

Although the loan will be used to finance a public program, the primary beneficiary will be private enterprise in the U.S. and Ethiopia. The loan funds will be available to finance contracts for goods or services with private U.S. firms, local firms and Code 941 firms. The project benefits will accrue principally to road users in Ethiopia's private sector.

C. Impact on the Environment

The improved design and asphaltting of the three roads financed by AID will eliminate currently serious failures in the roads pavement and be designed to prevent bank erosion. The drainage structures will be constructed to minimize the disruption of natural flows of water and channeled to maximize the use of water for irrigation purposes. The asphaltting will reduce the air pollution caused by dust in the villages adjacent to the three roads.

The gravel roads financed by IBRD will open up new land for cultivation and allow agriculture extension services to reach new areas. These extension services will provide guidance both on methods to increase agriculture production and on soil conservation techniques. The roads will be designed and constructed to minimize the erosion of embankments according to sound engineering practices.

The IBRD provided technical assistance to the local contracting industry and IHA will emphasize the use of local materials in construction. The instruction will include techniques of erosion control for road construction and improving borrow pits. The total project will have a beneficial effect on the environment.

VI. Implementation

A. Asphalting Projects

Bidding for the construction contract for the three asphalt surfacing projects will be open to U.S. firms, other AID Code 941 country firms and local firms. The IHA has agreed that the three projects can be bid as one job in order to make the project attractive for U.S. contractors.

Engineering services for both the review of bid documents and supervision of construction will be provided by a U.S. consulting firm working with the staff of the IHA Contract Construction Division. One U.S. engineer will arrive four months prior to the issuance of bid documents to review the plans, specifications and cost estimates and to assist the IHA in preparing contract documents suitable for bidding by U.S. and other Code 941 country firms as well as local firms. Following issuance of the bid documents and review and analysis of the bids, the U.S. engineer would direct the supervision of construction of the Wolisso-Jimma Road, and an additional U.S. Engineer would arrive to supervise the construction of the Agaro-Bedelle and Lekemti-Ghimbi Roads.

Based on the surfacing projects carried out under the Fourth Highway Program, the IHA Design Division estimates the completion time for the three projects at 32 months for the Wolisso-Jimma Road, 14 months for the Agaro-Bedelle Road, and 16 months for the Lekemti-Ghimbi Road. The project schedule is as follows:

Authorization of Loan	June 1972
Notice of Intended Procurement for Engineering Services	June 1972
Prequalification of Consultants	September 1972
Selection of Consultants	October 1972
Satisfaction Initial Conditions Precedent	November 1972
Arrival of U.S. Engineer in Ethiopia	December 1972
Notice of Intended Procurement for Contract	January 1973
Completion of Review of Bid Documents and approval by AID	March 1973
Prequalification of Contractors	April 1973
Issuance of Bid Documents	April 1973
Award of Contract	June 1973
Arrival of additional U.S. engineer and beginning of construction	July 1973
Completion of Agaro-Bedelle Road	September 1974
Completion of Lekemti-Ghimbi Road	November 1974
Completion of Wolisso-Jimma Road	March 1976

B. Procurement of Road Maintenance Equipment

IHA intends to procure road maintenance equipment from the U.S. using its own Procurement Branch. The IHA may also use the services of the Afro-American Purchasing Center (AAPC) of New York. The procurement schedule for the road maintenance equipment is as follows:

Authorization of Loan	June 1972
A.I.D. Approval of Bid Documents	September 1972
Satisfaction of All Conditions Precedent	January 1973
Issuance of Bid Documents to Suppliers	January 1973
Award of Bids	February 1973
Arrival of Road Maintenance Equipment in Ethiopia	September 1973

C. Disbursement Schedule

Based on the above schedule, the schedule of cumulative loan disbursements as of June 30 and December 31 of each year is as follows:

	<u>Asphalting, Projects ^{1/}</u>	<u>Road Maintenance Equipment</u>
December 31, 1972	-	-
June 30, 1973	.6	-
December 31, 1973	1.2	-
June 30, 1974	2.3	2.5
December 31, 1974	3.4	2.5
June 30, 1975	4.2	2.5
December 31, 1975	6.2	2.5
June 30, 1976	6.4	2.5
December 31, 1976	6.3	2.5

VII. Issues

None

^{1/} Assumes contingency required and 5% of construction contract price retained for one year following completion of project.

CHECKLIST OF STATUTORY CRITERIA
DEVELOPMENT LOAN FUND

Many of the questions require only yes or no answers. Others, however, must be answered more fully. In those cases, a specific reference to explicit discussion of the matter in the loan paper will suffice. But where the loan paper does not deal explicitly with a matter that clearly requires more than a yes or no response, sufficient response must be made to indicate that the matter has been appropriately considered.

The following abbreviations are used in the checklist:

FAA - Foreign Assistance Act of 1961, as amended, incorporating amendments effected by the Foreign Assistance Act of 1971.

App. - Foreign Assistance and Related Agencies Appropriations Act, 1971.

MMA - Merchant Marine Act of 1936, as amended

Space for answers is provided in the margin to the right of each question. This form must be made a part of the Capital Assistance Paper.

I. COUNTRY PERFORMANCE

A. Progress Towards Country Goals

FAA 50501(d)(5), 201(b)(7),
201(b)(8), 208. Discuss the extent
to which the country is:

(a) Making appropriate efforts to increase food production and improve means for food storage and distribution.

(b) Creating a favorable climate for foreign and domestic private enterprise and investment.

(c) Increasing the people's role in the developmental process.

The Third Five Year Plan (1968-1973) puts major stress on increased food production and improved marketing of agricultural products, and allocated a considerably higher level of projected expenditures for agriculture than in the past.

Ethiopia provides tax holidays and duty free entry privileges to foreigners investing in needed development projects. The government plans to establish a trade and investment center to assist businessmen to improve further the Investment Proclamation.

Villagers in certain parts of Ethiopia are building schools, water systems and farm-to-market roads and are modernizing farms with the help of U.S., Sweden, et al. This is on a modest scale so far but is an appreciable start.

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(d) Allocating expenditures to development rather than to unnecessary military purposes or intervention in other free countries' affairs.

See 1.D., 2 below.

(e) Willing to contribute funds to the project or program.

The IEG will contribute approximately \$8.9 million to the total project.

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

The traditional monarchical system in Ethiopia is gradually broadening. The IEG is allowing greater freedom of expression, although the press is still largely government-controlled. There is a 15 year old elected Parliament with some, if limited, effective powers. Entrepreneurs operate fairly freely, and trade unions are beginning to have an independent voice. The government is seeking Western advice in legal matters, taxation, finance, private enterprise, and information services. The Ministry of Land Reform and Administration has developed land reform legislation which is presently under consideration by the Parliament and may be promulgated this year.

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

The IEG has strengthened its commitment to development in recent years, and has shown a new willingness to take meaningful self-help measures in order to carry out the Third-Year Plan (1968-1973).

B. Relations with the United States

1. FAA §620(c). Is the government indebted to any U.S. citizen for goods or services furnished or ordered where: (a) such citizen has exhausted available legal remedies, including arbitration, or (b) the debt is not denied or contested by the government, or (c) the indebtedness arises under such government's, or a predecessor's unconditional guarantee?

No such indebtedness is known to exist.

2. FAA §620(d). If the loan is intended for construction or operation of any productive enterprise that will compete with U.S. enterprise, has the country agreed that it will establish appropriate procedures to prevent export to the U.S. of more than 20% of its enterprise's annual production during the life of the loan?

Not applicable

3. FAA §630(e)(1). Has the country's government, or any agency or subdivision thereof, (a) nationalized or expropriated property owned by U.S. citizens or by any business entity not less than 50% beneficially owned by U.S. citizens, (b) taken steps to repudiate or nullify existing contracts or agreements with such citizens or entity, or (c) imposed or enforced discriminatory taxes or other exactions, or restrictive maintenance or operation conditions? If so, and more than six months has elapsed since such occurrence, identify the document indicating that the government, or appropriate agency or subdivision thereof, has taken appropriate steps to discharge its obligations under international law toward such citizen or entity? If less than six months has elapsed, what steps if any has it taken to discharge its obligations?

No to first question.
Second question not applicable.

4. FAA §620(j). Has the country permitted, or failed to take adequate measures to prevent, the damage or destruction by mob action of U.S. property, and failed to take appropriate measures to prevent a recurrence and to provide adequate compensation for such damage or destruction?

No.

5. FAA §620(l). Has the government instituted an investment guaranty program under FAA §271(b)(1) for the specific risks of inconvertibility and expropriation or confiscation? Yes.

6. FAA §620(o): Fisherman's Protective Act of 1954, as amended, Section 5. Has the country seized, or imposed any penalty or sanction against, any U.S. fishing vessel on account of its fishing activities in international waters? If, as a result of a seizure, the U.S.G. has made reimbursement under the provisions of the Fisherman's Protective Act and such amount has not been paid in full by the seizing country, identify the documentation which describes how the withholding of assistance under the FAA has been or will be accomplished. No.

7. FAA §620(q). Has the country been in default, during a period in excess of six months, in payment to the U.S. on any FAA loan? No.

8. FAA §620(t). Have diplomatic relations between the country and the U.S. been severed? If so, have they been renewed? No, to the first question. Second question not applicable.

C. Relations with Other Nations and the U.N.

1. FAA §620(i). Has the country been officially represented at any international conference when that representation included planning activities involving insurrection or subversion directed against the U.S. or countries receiving U.S. assistance?

No, as far as known.

2. FAA §§620(a), 620(n); Has the country sold, furnished, or permitted ships or aircraft under its registry to carry to Cuba or North Viet-Nam items of economic, military, or other assistance?

No, as far as known.

3. FAA §620(u); App. §108 What is the status of the country's U.N. dues, assessments, or other obligations? Does the loan agreement bar any use of funds to pay U.N. assessments, dues, or arrearages?

Ethiopia is not in arrears in its obligations to the U.N. The loan agreement will restrict the loan funds to the project.

D. Military Situation

1. FAA §620(i). Has the country engaged in or prepared for aggressive military efforts directed against the U.S. or countries receiving U.S. assistance?

No, as far as known.

2. FAA 8620(s). What is (a) the percentage of the country's budget devoted to military purposes, and (b) the amount of the country's foreign exchange resources used to acquire military equipment? Is the country diverting U.S. development assistance or P.L. 480 sales to military expenditures? Is the country diverting its own resources to unnecessary military expenditures? (Findings on these questions are to be made for each country at least once each fiscal year and, in addition, as often as may be required by a material change in relevant circumstances.) Has the country spent money for sophisticated weapons?

About 30% of the country's budget is devoted to defense and security purposes. Little foreign exchange is used to acquire military equipment most of which is grant financed under U.S. MAP. The November 1968 report of the Ethiopian Study Team (Bell report) concluded that "Ethiopia is not diverting United States economic assistance nor its own resources to unnecessary military expenditures." The findings of the Bell Report were reconfirmed in December 1971.

The answers to the last three questions are no.

II. CONDITION OF THE LOAN

A. General Soundness

-- Interest and Repayment

1. FAA §§201(d), 201(d)(2).
 Is the rate of interest excessive or unreasonable for the borrower? Are there reasonable prospects for repayment? What is the grace period interest rate; the following period interest rate? Is the rate of interest higher than the country's applicable legal rate of interest?

The loan terms are low and reasonable. There are reasonable prospects for repayment. The grace period interest rate is 2% followed by an interest rate of 3% for the duration of the loan. The answer to the last question is no.

-- Financing

1. FAA §201(b)(1). To what extent can financing on reasonable terms be obtained from other free-world sources, including private sources within the U.S.?

Concessional financing not believed available for purpose of this loan from other free world sources. Need for lenient terms, size and purpose of loan preclude consideration of other private or official U.S. sources.

-- Economic and Technical Soundness

1. FAA §§201(b)(2), 201(e). The activity's economic and technical soundness to undertake loan; does the loan application, together with information and assurances, indicate that funds will be used in an economically and technically sound manner?

Yes, See Sections II and III of Capital Assistance Paper.

2. FAA §611(a)(1). Have engineering, financial, and other plans necessary to carry out assistance, and a reasonably firm estimate of the cost of assistance to the U.S., been completed?

The necessary engineering and financial planning for the project has been completed (see Sections II, IV and VI of the Capital Assistance Paper) and reasonably firm cost estimates have been obtained (see Annex VI).

3. FAA §611(b); App. #101. If the loan or grant is for a water or related land-resource construction project or program, do plans include a cost-benefit computation? Does the project or program meet the relevant U.S. construction standards and criteria used in determining feasibility?

Not applicable.

4. FAA §511(a). If this is a Capital Assistance Project with U.S. financing in excess of \$1 million, has the principal A.I.D. officer in the country certified as to the country's capability effectively to maintain and utilize the project?

Yes, the Mission Director has so certified. See Annex VIII.

B. Relation to Achievement of Country and Regional Goals.

-- Country Goals

1. FAA §§207, 281(a). Describe this loan's relation to:

a. Institutions needed for a democratic society and to assure maximum participation on the part of the people in the task of economic development.

The loan will be implemented by the Imperial Highway Authority. It is intended to help strengthen that institution's administrative and technical capabilities. The road asphaltting made possible by the loan should contribute to improved services on by for the people and to greater popular incentives toward local economic development.

b. *Enabling the country to meet its food needs, both from its own resources and through development, with U.S. help, of infrastructure to support increased agricultural productivity.*

Properly maintained and asphalted roads will facilitate the movement of agriculture products and of agricultural inputs needed for increased agricultural productivity.

c. *Meeting increasing need for trained manpower.*

Not applicable for AID inputs. However, it is a goal of ICRD inputs which AID supports.

d. *Developing programs to meet public health needs.*

Not applicable.

e. *Assisting other important economic, political, and social development activities, including industrial development; growth of free labor unions; cooperatives and voluntary agencies; improvement of transportation and communication systems; capabilities for planning and public administration; urban development; and modernization of existing laws.*

The loan will assist in the maintenance and improvement of Ethiopia's road system.

2. FAA §201(b)(4). *Describe the activity's consistency with and relationship to other development activities, and its contribution to realizable long-range objectives.*

The loan is crucial to the realization of the Third Five-Year Plan's objective of improved road maintenance and increased emphasis on road improvement. For further analysis see Section III for the Capital Assistance Paper.

3. FAA §201(b)(9). How will the activity to be financed contribute to the achievement of self-sustaining growth?

See Section III-C of the Capital Assistance Paper.

4. FAA §201(f). If this is a project loan, describe how such project will promote the country's economic development, taking into account the country's human and material resource requirements and the relationship between ultimate objectives of the project and overall economic development.

The loan will assist the IEG in increasing its trained manpower pool and utilizing its existing material resource more effectively. For further analysis see Section III of Capital Assistance Paper.

5. FAA §201(b)(3). In what ways does the activity give reasonable promise of contributing to development of economic resources, or to increase of productive capacities?

The loan will assist the Imperial Highway Authority in increasing the productivity of its equipment maintenance operations and consequently of its road maintenance and construction operations.

6. FAA §281(b). How does the program under which assistance is provided recognize the particular needs, desires, and capacities of the country's people; utilize the country's intellectual resources to encourage institutional development; and support civic education and training in skills required for effective participation in political processes.

The loan will assist the IEG in meeting the transportation needs of the Ethiopian people.

7. FAA §601(a). How will this loan encourage the country's efforts to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture, and commerce; and (f) strengthen free labor unions?

The loan will encourage Ethiopia's efforts with respect to (a), (b), (c), (d), and (e) through providing better and cheaper transportation. Part (f) is not applicable.

8. FAA §202(a). Indicate the amount of money under the loan which is: going directly to private enterprise; going to intermediate credit institutions or other borrowers for use by private enterprise; being used to finance imports from private sources; or otherwise being used to finance procurements from private sources.

The entire amount of the loan will be used to finance procurement from private sources.

9. FAA §611(a)(3). What legislative action is required within the recipient country? What is the basis for a reasonable anticipation that such action will be completed in time to permit orderly accomplishment of purposes of loan?

No legislative action is required, other than approval under IEC constitutional requirements.

-- Regional Goals

1. FAA 8619. If this loan is assisting a newly independent country, to what extent do the circumstances permit such assistance to be furnished through multilateral organizations or plans?

Not applicable.

2. FAA 8209. If this loan is directed at a problem or an opportunity that is regional in nature, how does assistance under this loan encourage a regional development program? What multilateral assistance is presently being furnished to the country?

First question not applicable. Multilateral assistance is being furnished to Ethiopia by the IBRD and the UN (WHO, UNESCO, UNICEF, UNDP, FAO).

C. Relation to U.S. Economy

-- Employment, Balance of Payments, Private Enterprise

1. FAA 88201(b)(6); 108, Fifth. What are the possible effects of this loan on U.S. economy, with special reference to areas of substantial labor surplus? Describe the extent to which assistance is constituted of U.S. commodities and services, furnished in a manner consistent with improving the U.S. balance of payments position.

There is no special applicability in reference to areas of substantial labor surplus. See Section V of Capital Assistance Paper for other questions.

2. FAA 88512(b), 638(h). What steps have been taken to assure that, to the maximum extent possible, foreign currencies owned by the U.S. and local currencies contributed by the country are utilized to meet the cost of contractual and other services, and that U.S. foreign-owned currencies are utilized in lieu of dollars?

The IEC is paying a portion of the project local costs.

3. FAA 8601(d); App. 8109. If this loan is for a capital project, to what extent has the Agency encouraged utilization of engineering and professional services of U.S. firms and their affiliates? If the loan is to be used to finance direct costs for construction, will any of the contractors be persons other than qualified nationals of the country or qualified citizens of the U.S.? If so, has the required waiver been obtained?

U.S. professional services will be encouraged.

Local and Code 941 countries which includes the U.S. will be eligible.

4. FAA 8608(a). Provide information on measures to be taken to utilize U.S. Government excess personal property in lieu of the procurement of new items.

Excess property is not deemed appropriate for the project.

5. FAA 8602. What efforts have been made to assist U.S. small business to participate equitably in the furnishing of commodities and services financed by this loan?

The Loan Agreement and implementation letters will include express provisions for U.S. small business to have the opportunity to participate equitably in the furnishing of commodities and services financed by this loan.

2. FAA 8604(b). Will any part of this loan be used for bulk commodity procurement at adjusted prices higher than the market price prevailing in the U.S. at time of purchase?

No.

1. FAA 8604(a). Will commodity procurement be restricted to U.S. except as otherwise determined by the President?

Yes.

Procurement

7. FAA 8611(c). If this loan involves a contract for construction that obligates an excess of \$100,000, will it be on a competitive basis? If not, are there factors which make it impracticable?

Yes.

6. FAA 8621. If the loan provides technical assistance, how is private enterprise on a contract basis utilized? If the facilities of other Federal agencies will be utilized, in what ways are they particularly suitable; are they competitive with private enterprise (if so, explain); and how can they be made available without undue interference with domestic programs?

Technical assistance financed by the loan will be provided as professional services from U.S. private enterprise. The facilities of other Federal agencies will not be utilized.

3. FAA §604(e). Will any part of this loan be used for procurement of any agricultural commodity or product thereof outside the U.S. when the domestic price of such commodity is less than parity?

No.

D. Other Requirements

1. FAA §201(b). Is the country among the 20 countries in which development loan funds may be used to make loans in this fiscal year?

Yes.

2. App. 2106. Does the loan agreement provide, with respect to capital projects, for U.S. approval of contract terms and firms?

The Loan Agreement will so provide.

3. FAA §620(k). If the loan is for construction of a productive enterprise, with respect to which the aggregate value of assistance to be furnished will exceed \$100 million, what preparation has been made to obtain the express approval of the Congress?

Not applicable.

4. FAA §620(b), 620(f):
 Has the President determined that the country is not dominated or controlled by the international Communist movement? If the country is a Communist country (including, but not limited to, the countries listed in FAA §620(f)) and the loan is intended for economic assistance, have the findings required by FAA §620(f) been made and reported to the Congress?

Ethiopia is not a communist or communist-dominated country. The Secretary of State so determined on October 11, 1961.

5. FAA §620(h). What steps have been taken to insure that the loan will not be used in a manner which, contrary to the best interest of the United States, promotes or assists the foreign aid projects of the Communist-bloc countries?

The loan agreement contains the standard AID clause in this regard.

6. App. §110. Will any funds be used to finance procurement of iron and steel products for use in Vietnam other than as contemplated by §110.

No.

7. FAA §636(i). Will any part of this loan be used in financing non-U.S.-manufactured automobiles? If so, has the required waiver been obtained?

No.

8. FAA §8620(a)(1) and (5), 820(p):
Will any assistance be furnished or funds made available to the government of Cuba or the United Arab Republic?

No.

9. FAA §620(q). *Will any part of this loan be used to compensate owners for expropriated or nationalized property? If any assistance has been used for such purpose in the past, has appropriate reimbursement been made to the U.S. for sums diverted?*

- (1) No.
 (2) None has been so used.

10. FAA §201(f). *If this is a project loan, what provisions have been made for appropriate participation by the recipient country's private enterprise?*

Ethiopian private enterprise will benefit directly from the improved road maintenance made possible by the project. Ethiopian enterprise will be allowed to compete for goods and services in the project.

11. App. #104. *Does the loan agreement bar any use of funds to pay pensions, etc., for persons who are serving or who have served in the recipient country's armed forces?*

Yes. The loan agreement limits the use of loan funds to the specific project.

12. MMA § 901.b. Does the loan agreement provide, for compliance with U.S. shipping requirements, that at least 50% of the gross tonnage of all commodities financed with funds made available under this loan (computed separately by geographic area for dry bulk carriers, dry cargo liners, and tankers) be transported on privately owned U.S.-flag commercial vessels to the extent such vessels are available at fair and reasonable rates for U.S. flag vessels. Does the loan agreement also provide for compliance with U.S. shipping requirements, that at least 50% of the gross freight revenues of goods shipped under this loan must be earned by privately owned U.S.-flag commercial vessels to the extent such vessels are available at fair and reasonable rates for U.S.-flag vessels?
- Yes, to both questions.
13. FAA. Section 481. Has the country failed to take adequate steps to prevent narcotic drugs from entering the U.S. unlawfully?
- No. Ethiopia is co-operating with U.S. and international organizations in the control of narcotic drugs.
14. FAA. Section 604.e. Has there been compliance with restriction against procuring with AID funds agricultural commodities outside the U.S. when the domestic price of such commodity is less than parity.
- No agriculture commodities will be procured with funds from this loan.

SUMMARY IERD AND AID ASSISTANCE
to IMPERIAL HIGHWAY AUTHORITY

A. IERD Assistance

1. First Highway Project, Loan 31-ET, September 1950 (US \$5 million)

Purpose: To finance purchases of urgently needed equipment for reconstruction and maintenance of the road network.

2. Second Highway Project, Loan 166-ET, June 1957 (US \$15 million)

Purpose: To finance foreign exchange costs for:

- (a) constructing of main roads (about 850 km); and
- (b) engineering by consultants of roads for future construction (about 1,000 km).

3. Third Highway Project IDA Credit 35-ET, February 1963 (US\$13.5 million)

Purpose: To finance foreign costs for:

- (a) completing road construction started under the Second Highway Project;
- (b) constructing new roads (about 210 km) and several bridges;
- (c) bituminous surfacing of roads (about 800 km); and
- (d) consulting services to:
 - (i) replace staff of the United States Bureau of Public Roads in IHA management; and
 - (ii) carry out economic and engineering studies of a road through the Awash Valley.

A.I.D. financed two roads in this project.

4. Fourth Highway Project, Loan 523-ET (US \$13.5 million) and IDA Credit 111-ET (US \$7.7 million), January 1968

Purpose: To finance foreign costs for:

- (a) constructing main roads (about 420 km);
- (b) asphaltic paving of main roads (about 170 km); and
- (c) consulting services for feasibility studies of further roads, advice to the IHA, technical assistance and training.

The Swedish Government also provided a US \$5.8 million credit for this project, bringing the total foreign participation to US \$ 27 million.

B. A.I.D. Assistance

1. Highway Maintenance and Secondary Feeder Roads Project, Loan 663-H-006 (US \$2.6 million).

Purpose: To finance foreign exchange costs for:

- (a) procurement of maintenance equipment, equipment parts and shop tools for a country-wide maintenance program for the primary road system \$2.6 million;
 - (b) procurement of construction and maintenance equipment and equipment parts for the initiation of a Secondary Feeder Road Betterment Program on two provinces \$902,000.
2. Third Highway Project, Loan 663-H-007, April 1963, (US \$4 million)

Purpose: To finance local currency costs of two, double lane all-weather gravel roads.

- (a) Lekempti-Ghimbi 109 kms; and
- (b) Agaro-Bedelle 104 kms.

These two roads will be asphalt surfaced under this project.

3. Bailey Bridges, Loan 663-H-009, May 1964 amended June 1966 (US \$925,000)

Purpose: To finance the foreign exchange costs of procuring 60 Bailey Bridges and related services in the U.S.

4. Highway Equipment Repair Facilities, Loan 663-H-017, November 1969, (US \$3.5 million)

Purpose: To finance the U.S. costs of procuring shop tools and equipment, technical assistance services, and spare parts required for the project.

ANNEX V.ASPHALTING PROJECTS:
DETAILED COST ESTIMATES

Item	Quantities	U.S.S	
		Unit Price	Total
I. Wolisso-Jimma			
1. Unclassified Excavation (Minor Relocation - 4 kms)	100,000 m ³	\$ 1.58	\$ 158,000
2. Unclassified Excavation (widening and ditch excavation)	112,000 m ³	1.49	168,680
3. Special Sub-base, Grading A (Shoulder reinforcement)	80,000 m ³	3.51	280,800
4. Reconditioning of Existing Roadbed	223.0 km	1535	342,305
5. Crushed Aggregate Base Crse. Gr. B Km 115-185 17.5 cms Comp. depth Km 195-338 13.0 cms Comp. depth	270,500 m ³	9.21	2,491,305
6. Course Aggregate f. Design 3 Bitum. Surface Treatment	35,900 M.T.	7.46	267,814
7. Fine Aggr. f. Design 3 Bitum. Surface Treatment	11,240 M.T.	8.33	93,629
8. Asphalt MC-30, Prime Coat (1.1 Kg/sq.m over 7.00 m. width)	1,720 M.T.	162.28	279,122
9. Asphalt MC-3000, Double Bit. Surface Treatment	4,210 M.T.	153.51	646,277
10. Excavation f. Structures	2,000 m ³	3.51	7,020
11. Class "A" Concrete	200 m ³	109.65	21,930
12. Reinforcement Steel	20,000 kg	.57	11,400
13. Class B Masonry	600 m ³	54.82	32,892
14. 0.60 cm dia. R.C.P. Culvert	100 L.M.	57.02	5,702
15. 1.00 m. dia. R.C.P. Culvert	100 L.M.	74.56	7,456
16. Grout.Rubble Paved W-way	300 m ²	7.46	2,238
		Total U.S.\$	4,814,770

Item	Quantities	U.S.S	
		Unit Price	Total
II. Agaro-Bedelle			
1. Reconditioning of Existing Roadbed	95.35 kms	\$1,535.00	\$ 146,362
2. Crushed Aggregate Base Crse. Grading B (10 cms. compacted depth)	78,200 m ³	9.65	754,630
3. Asphalt, Grade MC-30 for Prime Coat (1.1 kg/sq.m. over 7.00 meters width)	735 M.T.	166.67	122,502
4. Coarse Aggregate f. Design. 3 Bituminous Surface Treatment	15,351 M.T.	7.46	114,518
5. Fine Aggregate f. Design. 3 Bituminous Surface Treatment	4,808 M.T.	8.33	40,034
6. Asphalt, Grade MC-3000 Double Bit. Surface Treatment	1,803 M.T.	157.89	284,676
		Total	\$ 1,462,722
III. Lokemti-Ghimbi			
1. Reconditioning of Existing Roadbed	110.77 km	1,535.00	\$ 170,031
2. Crushed Aggr. Base Crse, Grading B (5 cms. compacted depth)	45,000 m ³	9.65	434,250
3. Asphalt, Grade MC-30 for Prime Coat (1.1 Kg/sq.m. over 7.00 meters width)	853 M.T.	166.67	142,169
4. Coarse Aggregate for Design 3 Bituminous Surface Treatment	17,834 M.T.	7.46	133,042
5. Fine Aggregate for Design 3 Bitum. Surface Treatment	5,583 M.T.	7.89	44,050
6. Asphalt, Grade MC-3000 Double Bit. Surf. Treatment	2,094 M.T.	157.89	330,622
7. Grouted Rubble Paved W'ways (Repairs of existing ditches)	2,000 m ²	7.46	14,920
		Total	\$ 1,269,084

IV. Summary

<u>Project</u>	<u>Length</u>	<u>U.S.\$</u>	
		<u>Total Est. Const. Cost</u>	<u>Cost per Km</u>
1. Wolisso-Jimma	223	\$ 4,814,770	\$ 21,600
2. Agaro-Bedelle	95.4	1,462,722	15,400
3. Lekempti-Ghimbi	110.8	1,269,084	11,500
	<u>429</u>		

COST OF EQUIPMENT, SPARE PARTS AND TECHNICAL ASSISTANCE
TO BE PROCURED UNDER THE LOAN

		<u>U.S. \$</u>	
	<u>Units</u>	<u>Unit Cost</u>	<u>Total</u>
A. <u>Equipment</u>			
1. Graders	15	25,000	375,000
2. Dump Trucks (7 cu. yd)	30	20,000	600,000
3. Loaders	5	22,000	110,000
4. Asphalt distributors	2	30,000	60,000
5. Pick-up Trucks	12	5,000	60,000
6. Crushers	2	200,000	400,000
7. Compressors (600 cfm)	2	40,000	80,000
8. Low-boys w/tractor	5	60,000	300,000
9. Wagon drills	<u>1</u>	<u>15,000</u>	<u>15,000</u>
	subtotal	76	2,000,000
B. Spare Parts (10%)			200,000
C. Procurement			75,000
D. Contingency			<u>225,000</u>
	Total		2,500,000

Types of Equipment

1. Grader - Cat. 12F or equivalent
2. Dump Truck - 8yd. Tandem Axle CX 4
3. Loader - 2 yd. CAT # 955 or equivalent
4. Asphalt Dist. - Model DCO 202 Etyrne MFG or equivalent
5. Pick Up Trucks 3/4 Ton Chev. Mod. K 2503 or equivalent
6. Crushers - 300 - 400 T.P.H KUE KEHN MODEL 1. equivalent
7. Compressors 600 C.F.M. Worthington Model Good Birmingham or equivalent
8. Low Boy-Tractor- Mack Truck Model DM6155X-50T.TLR WCM-47 or equivalent
9. Wagon Drills- Worthington Self Propelled Trk. Mod.Good or equivalent

ASPHALT IMPROVEMENT PROJECTS:

Details of Benefit - Cost Estimation

Traffic Projections 1/

Year	Mombasa Road					Isiambati-Ghimb					Amani-Bedalla Road				
	Cars	Buses	Trucks	Truck-Trailers	Total	Cars	Buses	Trucks	Truck-Trailers	Total	Cars	Buses	Trucks	Truck-Trailers	Total
1	60	65	62	17	224	22	35	46	8	111	73	48	55	9	185
2	66	67	66	18	237	24	37	50	8	121	79	51	58	10	193
3	72	67	72	20	253	27	43	54	9	133	86	53	62	10	211
4	94	71	73	21	269	29	47	55	10	145	93	56	66	11	226
5	105	73	84	24	286	32	52	65	11	160	100	59	70	11	240
6	113	75	90	27	305	35	57	70	12	174	108	62	74	12	256
7	120	77	98	29	324	39	62	71	14	192	117	65	78	13	273
8	126	80	106	32	347	43	69	84	15	211	126	68	83	13	290
9	133	82	113	35	368	47	75	91	17	230	137	73	89	14	313
10	145	85	121	38	392	52	83	99	18	252	150	78	95	15	338
11	154	87	129	41	415	57	91	108	20	276	163	83	102	16	364
12	162	90	138	44	441	63	100	118	22	303	178	89	100	17	393
13	171	92	148	47	469	69	110	129	24	332	194	95	116	19	424
14	183	97	152	51	497	76	122	140	27	365	211	102	124	20	457
15	207	93	162	55	529	84	134	153	29	400	230	109	133	21	493
16	221	101	181	60	563	92	147	167	32	438	251	117	142	23	533
17	237	104	184	64	599	101	162	182	35	480	273	125	152	24	574
18	254	107	195	69	638	111	172	198	39	526	298	134	163	26	621
19	266	110	220	74	673	120	182	214	42	568	325	144	176	28	673
20	285	114	233	78	710	130	203	231	45	614	354	156	190	31	731
21	302	117	247	83	749	140	224	250	49	663	386	168	205	33	792
22	320	121	262	88	791	151	242	270	53	716	421	182	222	36	861
23	338	125	278	93	834	161	258	290	57	766	458	196	240	39	933

BEST AVAILABLE COPY

Benefits: Aguru-Bedelle Road

Year	Vehicle Operating Cost Savings					Savings Year	Maintenance Cost Savings			Discounted Benefits			
	Cars 1.57	Buses 1.65	Trucks 3.55	Trailer Trucks 0.13	Total Savings Per		Cost For Km	Total Savings Annual	Total Benefits	10%	15%	20%	
1													
2													
3			223	61	434	159410	303	28785	187195	140640	123081	108333	
4			243	67	465	169725	372	35340	201065	140059	117256	98903	
5			258	67	490	176350	438	41610	220460	136884	109613	88603	
6		101	272	74	522	190530	512	48640	239170	135011	103393	80098	
7		106	287	80	554	202110	591	56145	258355	132588	97116	72106	
8		111	305	80	583	210705	678	63650	276445	128562	90370	64301	
9		119	328	86	623	221220	776	73720	302940	128477	86126	58710	
10		124	350	92	673	235645	892	84740	330385	127363	81671	53357	
11		135	375	98	720	252800	1012	96140	358940	125808	77136	48313	
12		145	401	104	773	262145	1147	108965	391110	124608	73098	43583	
13		155	427	116	838	303680	1291	122645	426325	123506	69278	39861	
14		166	456	123	911	325225	1444	137180	462395	121749	65336	36070	
15		173	489	129	991	348175	1611	153045	501620	120088	61649	32555	
16		182	503	141	1098	373320	1797	170715	545435	118795	58360	29535	
17		191	539	147	1198	400710	1987	188765	589535	116610	54768	26538	
18		200	555	159	1315	430445	2235	209475	644920	116021	52110	24249	
19		205	578	172	1455	460535	2446	232370	699205	114320	49154	21825	
20		204	609	180	1597	502055	2715	257925	764180	113557	46691	19945	
21		206	654	202	1860	540040	2998	284810	830850	112248	44118	18029	
22		207	617	221	1825	573125	3319	315305	908430	111555	41969	16433	
							TOTAL	2709970	9143460	2488849	1471993	981704	

BEST AVAILABLE COPY

Road	kms	Road Surfacing Cost	10% Physical Contingency	Capital Construction Costs/ (\$K)		Engineering Supervision Costs	Total Capital Cost	Year 1	Year 2	Year 3
				15% Price Escalation Contingency	Subtotal			20% 30%	30% 70%	50%
Wolisso-Jimma	223	4815	482	795	6092	455	6547	1309	1964	3274
Agaro-Bedelle	25	1463	146	241	1850	194	2044	613	1431	-(-)
Lekempti-Ghimbi	111	1270	127	210	1607	226	1833	550	1283	-(-)
		<u>7548</u>	<u>755</u>	<u>1246</u>	<u>9112</u>	<u>875</u>	<u>10424</u>	<u>2472</u>	<u>4678</u>	<u>3274</u>

	Year	Total Capital	Discounted Costs		
			10%	15%	20%
Wolisso-Jimma	1	1309	1190	1138	1091
	2	1964	1623	1485	1364
	3	<u>3274</u>	<u>2460</u>	<u>2152</u>	<u>1825</u>
Total		6547	5273	4775	4350
Agaro-Bedelle	1	613	557	533	511
	2	<u>1431</u>	<u>1183</u>	<u>1082</u>	<u>994</u>
Total		2044	1740	1615	1505
Lekempti-Ghimbi	1	550	500	478	458
	2	<u>1283</u>	<u>1060</u>	<u>970</u>	<u>891</u>
Total		1833	1560	1448	1349

Footnotes

- 1/ Traffic projection based on traffic counts and growth rates discussed in Section III.C. 2. of Capital Assistance Paper; Year 1 is 1971.
- 2/ The Molisso-Jimba road is classified as a hilly road. The vehicle operating cost saving (U.S. costs) per kilometer are 10074 for cars, 1026 for buses, .435 for trucks and .087 for truck-trailers. The savings per 223-kilometer trip are U.S. 1.65 for cars, U.S. 5.81 for buses, U.S. 9.70 for trucks, and U.S. 19.40 for truck-trailer.
- 3/ The formula for maintenance cost savings per kilometer (U.S. dollars) is $(341 + 5.40 \text{ AADT}) - (1017 + 0.76 \text{ AADT})$
- 4/ Vehicle operating cost savings plus road maintenance savings.
- 5/ See Section III. C. 3 of the Capital Assistance Paper.

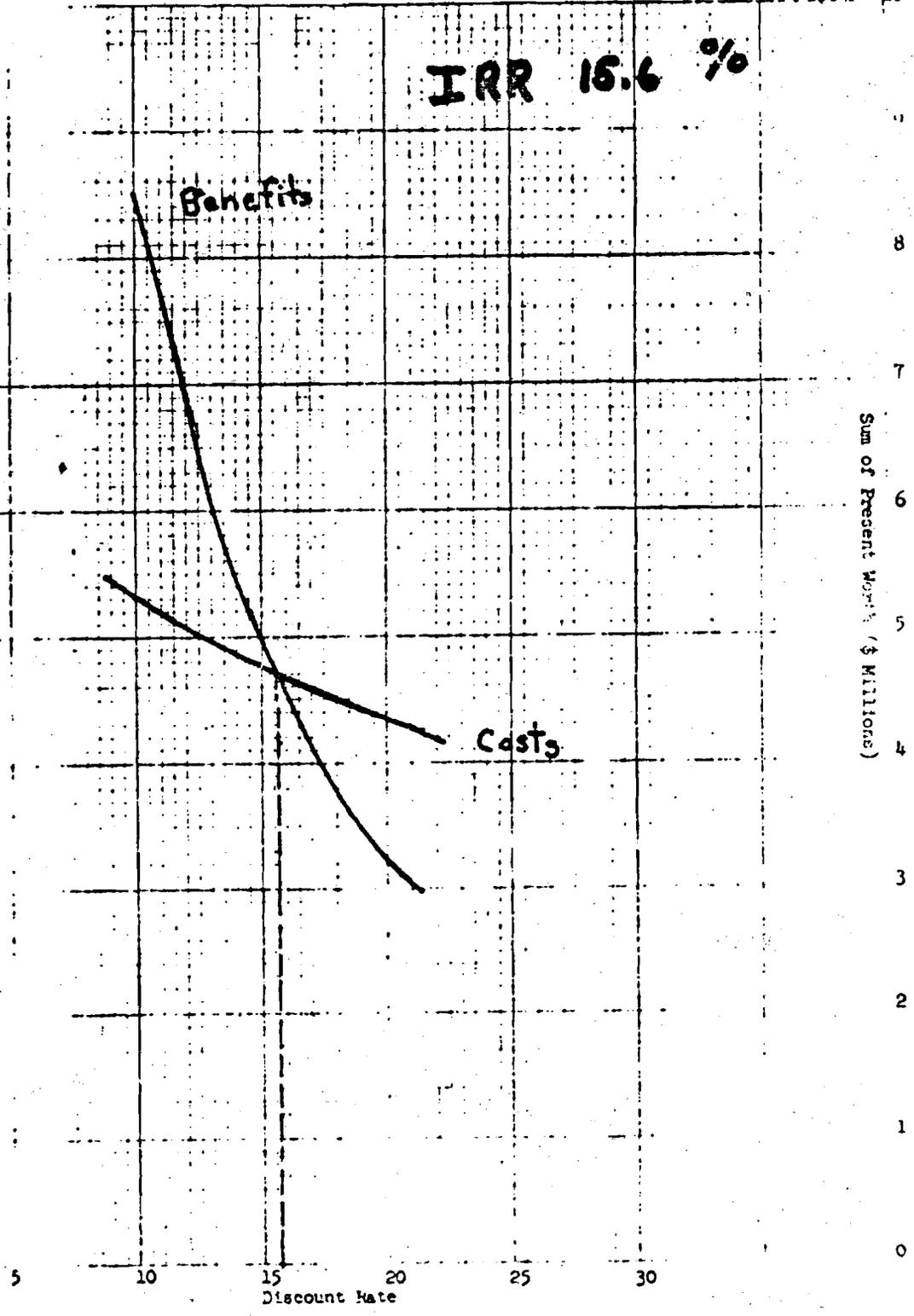
Wolisso - Jimma A

ANNEX VII

GRAPH 1

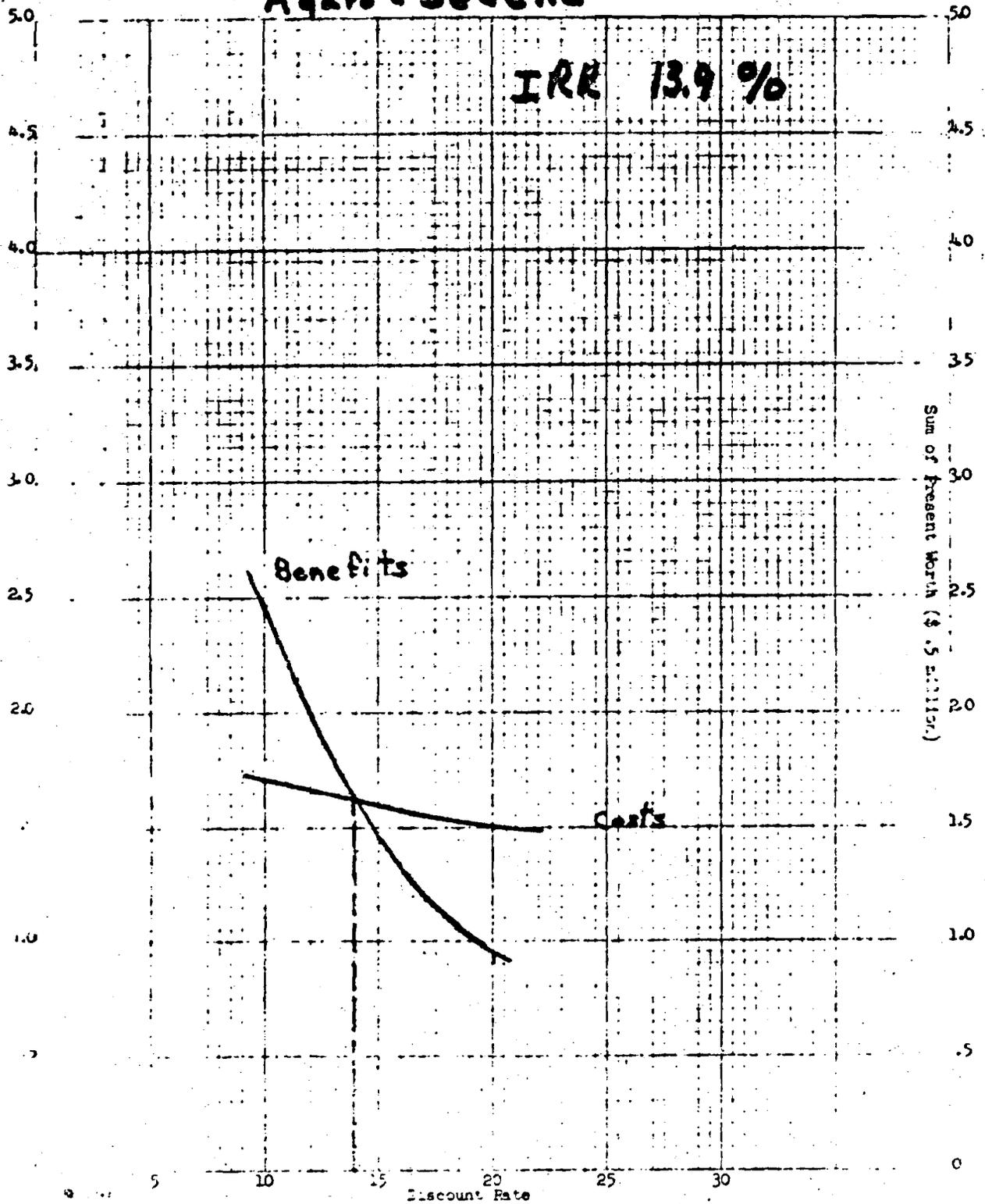
10

IRR 15.6 %



Agave - Bedelle

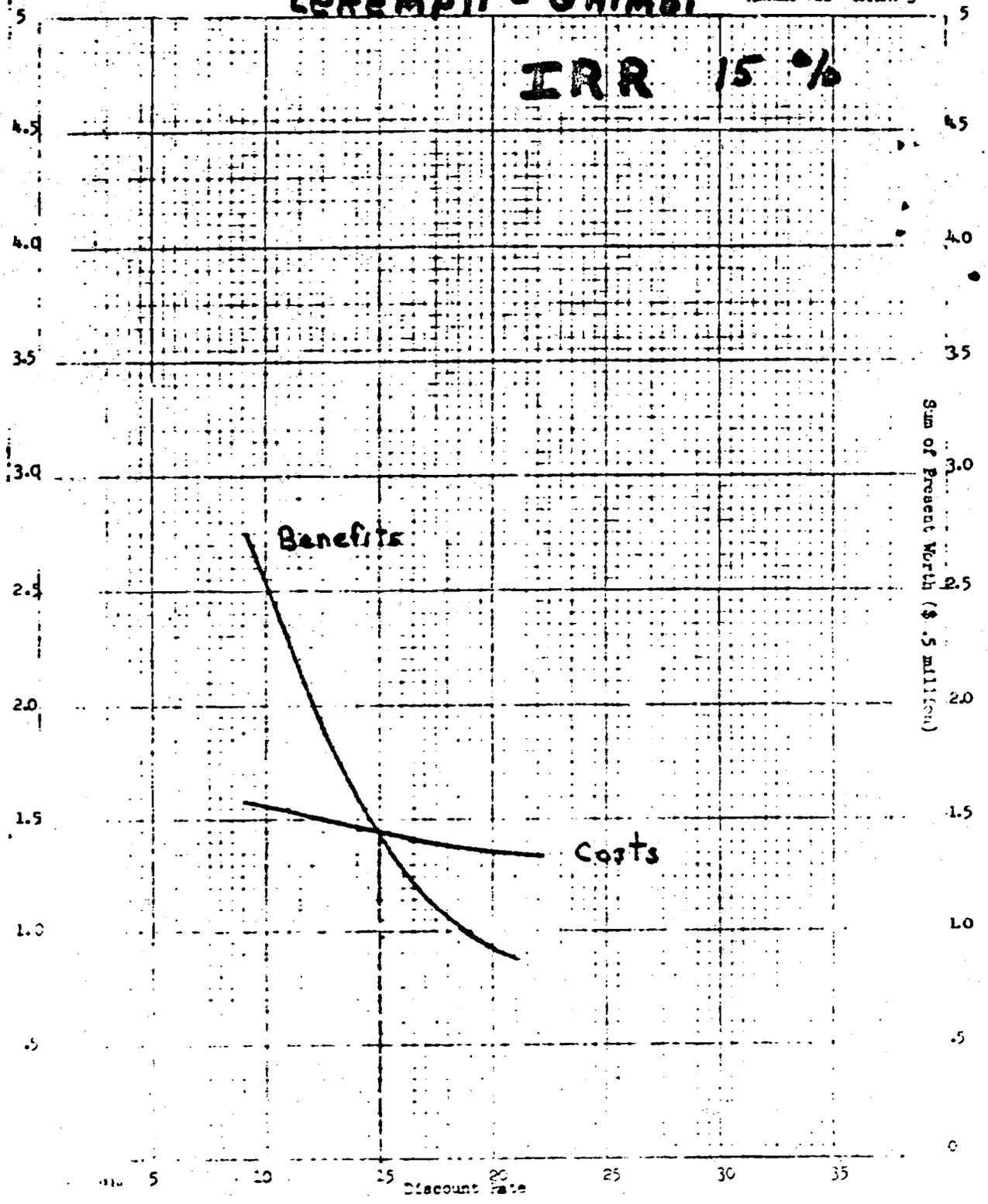
ANNEX VII GRAPH 2



Lekempti - Ghimbi

ANNEX VII GRAPH 3

IRR 15%

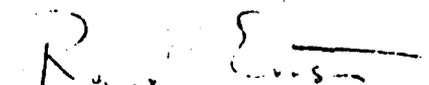


ANNEX VIII

CERTIFICATION PURSUANT TO SECTION 611 (c) OF THE
FOREIGN ASSISTANCE ACT OF 1961, AS AMENDED

I, Roger Ernst, the principal officer of the Agency for International Development in Ethiopia, having taken into account, among other things, the maintenance and utilization of projects in Ethiopia previously financed or assisted by the United States, do hereby certify that in my judgement Ethiopia has both the financial capability and the human resources capability to effectively maintain and utilize the capital assistance project, Fifth Highway Project.

With respect to the road maintenance equipment to be procured under the Fifth Highway Project, I base the above judgement on the excellent progress in equipment maintenance being made by the Imperial Highway Authority under the AID Highway Equipment Repair Facilities Project (A.I.D. Loan No. 663-H-017), and on the IEG's excellent record in providing the local currency funds needed for equipment maintenance. With respect to the roads to be upgraded and surfaced under the Fifth Highway Project, I base the above judgement on the proposed technical assistance for IHA road maintenance operations, upon assurances received from the IHA regarding implementation of the recommendations of the AID-financed Road Maintenance Study, and upon assurances received from the IEG regarding the provision of adequate financial resources for the maintenance of the roads to be upgraded under the loan.


Roger Ernst, Director
USAID/Ethiopia

9/12/12
Date

ANNEX IX

CAPITAL ASSISTANCE LOAN AUTHORIZATION

Provided from: Development Loan Funds
Ethiopia: Fifth Highway Project

Pursuant to the authority vested in the Administrator of the Agency for International Development (hereinafter called "A.I.D.") by the Foreign Assistance Act of 1961, as amended, and the delegations of authority issued thereunder, I hereby authorize the establishment of a loan pursuant to Part I, Chapter 2, Title I, the Development Loan Fund to the Imperial Ethiopian Government ("Borrower") of not to exceed Nine Million Three Hundred Thousand Dollars (\$9,300,000) to assist in financing foreign exchange and local currency costs of engineering services and upgrading and asphalt surfacing of the three primary roads and the foreign exchange costs of procurement of road maintenance equipment under the Fifth Highway Project. This loan will be subject to the following terms and conditions:

1. Interest Rates and Terms of Repayment

Borrower shall repay the loan to A.I.D. within forty (40) years from the date of the first disbursement under the loan, including a grace period of not to exceed ten (10) years. Borrower shall pay to A.I.D. interest on the outstanding balance at the rate of two percent (2%) per annum during the grace period and three percent (3%) per annum thereafter.

2. Currency of Repayment

Provision shall be made for repayment of the loan and payment of the interest in United States dollars.

3. Other Terms and Conditions

- a) Equipment, materials and services financed under the loan shall be procured from Ethiopia and from countries included in Code 941 of the A.I.D. Geographic Code Book.
- b) This loan shall be subject to such other terms and conditions as A I D. may deem advisable.

Assistant Administrator for Africa

Date