

663-0177

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

n.d.

PD-AAK-413

4

10

ETHIOPIA - FIFTH HIGHWAY PROGRAM AMENDMENT

BEST AVAILABLE DOCUMENT

(Original Loan No. 663-H-023)
(AID-DLC/P-1033)

FIFTH HIGHWAY AMENDMENT

TABLE OF CONTENTS

Page

Summary and Recommendation

I.	Background of Proposed Amendment.....	1
	A. Summary of COE Highway Development Assistance.....	1
	B. The Fifth Highway Program.....	1
	C. Borrower and Implementing Agency.....	2
	D. Relationship of Amendment to A.I.D.'s Strategy in Ethiopia.....	3
II.	Technical Analysis.....	3
	A. Amendment of Project Description.....	3
	B. Maintenance and Equipment Requirements.....	4
	C. Spare Parts Requirements.....	5
	D. EHA Ability to Carry Out Amended Project.....	6
III.	Economic Analysis.....	8
IV.	Financial Analysis.....	10
	A. Total Requirements.....	10
	B. A.I.D. Component.....	10
	C. Borrower Contribution.....	11
V.	Other Considerations.....	12
VI.	Implementation.....	12
VII.	Evaluation.....	13

Annexes

- A. Equipment Lists
- B. Economic Analysis Tables
- C. Draft Authorization
- D. Recommended Work Methods

ETHIOPIA: FIFTH HIGHWAY LOAN AMENDMENT

Summary and Recommendation

Note: The "Amount of Loan" and "Terms" remain the same under this proposed amendment.

1. Borrower: Government of Ethiopia (GOE), with the Ethiopian Highway Authority (EHA) acting as Implementing Agent.
2. Amount of Loan: \$9,300,000.00
3. Terms: Interest: Maturity: 2% p.a. during the grace period, 3% p.a. thereafter. 40 years including a 10-year grace period.

4. Project Description - The original A.I.D. loan was described as an input to the multidonor, World Bank appraised Fifth Highway Program. This program consisted of (a) the upgrading and asphaltting of three primary roads (440 km.), (b) construction of six gravel feeder roads (440 km.), (c) provision of technical assistance and (d) the procurement of emergency construction and maintenance equipment. The A.I.D. portion of the project consisted of the asphalt surfacing of the three primary roads, including the provision of construction supervision services, and the procurement of emergency road maintenance equipment. However, due to factors which caused serious overruns of expected costs, several changes were required in the Fifth Highway Program. While still retaining the original project objective of assistance to the development of a well-integrated road system, the A.I.D. financed component of the revamped Fifth Highway Program has been more narrowly defined for purposes of this amendment as consisting of the provision of equipment for the implementation of a five year program for road maintenance and rehabilitation. Proceeds of the A.I.D. loan previously programmed for highway construction (approximately \$6.8 million) will be used instead to finance the foreign exchange costs of road maintenance equipment. The balance of the A.I.D. loan (\$2.5 million) will be also used to purchase maintenance equipment as originally planned.

5. Project Rationale - During the first three Ethiopian Development Plans the concentration within the Ethiopian transportation sector was on the construction of primary roads. Little emphasis was placed on providing interconnecting rural roads by which local farmers could reap such benefits as extension services which would assist in increasing their productivity and also in increasing their accessibility to markets. It became apparent to the GOE that in order for the transportation sector to have its greatest impact on the development of the agriculture sector, the construction of local feeder roads was imperative. This is also consistent with the World Bank's strategy for agricultural development in Ethiopia. The emphasis of Bank-Group lending in the transport sector is on roads which promote expansion and improvement in the agriculture sector.

However, to realize full benefits from the development of a well integrated road network, the GOE and World Bank agree that existing roads must remain operable.

This project will contribute to this objective by providing a portion of the equipment required for a five year road maintenance and rehabilitation program and is, therefore, in keeping with the original purpose of providing assistance for the development of a well integrated road system in Ethiopia.

6. Estimated Financing for the Revamped Fifth Highway Program

A. Total Costs of Five Year Road Maintenance Program

<u>Source</u>	<u>(U.S. \$ Million)</u>	<u>Foreign Exchange (Equipment)</u>	<u>Local Costs* (Operations)</u>	<u>Total</u>
A.I.D.		9.3	-	9.3
U. K.		1.2	-	1.2
West Germany		4.5	-	4.5
GOE		<u>2.0</u>	-	<u>2.0</u>
SUBTOTAL		17.0	-	17.0

B. Construction of Two Feeder Roads**

<u>Source</u>	<u>(U.S. \$ Million)</u>	<u>Foreign Exchange</u>	<u>Local Costs</u>	<u>Total</u>
IBRD		14.1	2.9	17.0
GOE		—	<u>5.3</u>	<u>5.3</u>
SUBTOTAL		14.1	8.2	22.3
TOTAL COSTS OF FIFTH HIGHWAY PROGRAM		31.1	8.2	39.3

* Local cost financing for recurrent expenditures will be the responsibility of the GOE.

** See original CAP, pp. 27-30. The contribution of the GOE exceeds 25% of A.I.D. funding.

7. Background of Project - During 1971, the World Bank and the GOE developed the components for the Fifth Highway Program. In April of 1972 when it became clear that the World Bank could not provide sufficient International Development Association (IDA) funds to cover external financing requirements of this program, the World Bank and GOE requested A.I.D. participation in financing portions of this program which appeared to be most appropriate for A.I.D. financing vis à vis A.I.D. development objectives in Ethiopia. Thus, A.I.D. approved a \$9.3 million loan to the GOE for financing the foreign exchange costs of (a) the upgrading and asphaltting of three primary roads, including construction supervision services (approximately \$6.8 million), and (b) the procurement of emergency maintenance equipment (approximately \$2.5 million). Local costs of this component of the program were to be financed by the GOE. The IBRD and GOE would finance the remaining component of the Fifth Highway Program - the construction of six feeder roads.

Following the receipt of bids in 1973 which were substantially in excess of the funds provided by AID/IBRD and the GOE for primary and feeder road rehabilitation and construction, all parties concerned, during the summer of 1974, reexamined the priorities and funding requirements of the Fifth Highway Program as well as the proposed Sixth Highway Program now under development by the IBRD. As a result, a revamping of the Fifth Highway Program was proposed whereby (a) most, if not all, of the maintenance equipment scheduled for purchase under the Sixth Highway Program would be shifted to the Fifth Highway Program, with financing expanded to include A.I.D., U.K., West Germany and the GOE, and (b) only two of the planned six feeder roads would be constructed in the Fifth Highway Program, with financing by IBRD and GOE. Additionally, it was proposed that the Sixth Highway Program funds would be utilized for (a) the construction of the remaining four feeder roads and (b) the upgrading and asphaltting of a portion or all of the three primary roads, depending upon the GOE's reassessment of the priority of the roads in the context of current funding availabilities and requirements for feeder road construction. Funding for the Sixth Highway Program has not been finalized at this time.

On August 10, 1974, the GOE/EHA submitted to USAID/Ethiopia a list of priority maintenance equipment to be used in connection with the proposed reprogramming of A.I.D.'s Fifth Highway Loan funds. The GOE/EHA list, which was amended on October 12, 1974, is based on a five year maintenance program equipment requirements reported in the A.I.D.-financed "Road Maintenance Study - Ethiopia", published in June 1973 by the F.R. Harris, Inc..

8. Export-Import Bank Clearances - Not required, since the proposed amendment is merely a reprogramming of previously authorized funds.

9. Views of the Country Team - The Country Team concurs in this proposed amendment.

10. Issues - None.

11. Recommendacion - Authorization of an amendment to the Fifth Highway Project Loan (663-H-023) permitting approximately \$6.8 million of loan funds, previously programmed for road construction and supervision, to be used instead for the purchase of road maintenance equipment. A draft of the amended authorization is attached as Annex C.

USAID/REDSO Capital Assistance Committee

Capital Development Officer:	Robert H. Bell, REDSO
Engineer	: David Gephart, REDSO
Economist	: Joseph Lieberman, REDSO
Counsel	: William D. Jones, REDSO
Program Officer	: Larry Crandall, USAID/E

I. BACKGROUND OF PROPOSED AMENDMENT

A. Summary of GOE Highway Development Assistance

Under a program of highway development which commenced in the early 1950s with the establishment of the Ethiopian Highway Authority (EHA), Ethiopia's all-weather road network has increased from approximately 2,000 kilometers in 1951 to 8,675 kilometers in 1974, including 2,897 kilometers of asphalt road, 4,922 kilometers of gravel road and 856 kilometers of all-weather earth road.

The bulk of EHA's external assistance has come from the World Bank and A.I.D. . The Bank has extended a total of \$71.7 million in loans and credits in conjunction with the EHA's First thru Fifth Highway Programs and presently is evaluating a proposed credit of approximately \$30.0 million for the Sixth Highway Program. A.I.D. has provided a total of \$21.4 million, including the present loan of \$9.3 million to the Fifth Highway Program and a loan of \$4.7 million in 1970, a major portion of which provides technical assistance to the EHA. Other external assistance has been provided by Sweden (\$5.8 million) and West Germany (\$10.0 million), both for the Fourth Highway Program (1968-1973), and the U.K. (\$1.2 million).

For further details of past IBRD and A.I.D. assistance, see the original Capital Assistance Paper for the Fifth Highway Loan.

B. The Fifth Highway Program

Based on UNDP-financed studies under the Fourth Highway Program and preliminary studies undertaken by EHA's Planning Programming Division, preparations for the Fifth Highway Program began in late 1970 and details were finalized in 1972 following completion of final feasibility studies by EHA and appraisal by the World Bank. At this same time a Bank-supported AID-financed study was undertaken by the Engineering Consulting Firm of P.R. Harris, Inc. to develop a five-year plan of action for the improvement of highway maintenance in Ethiopia.

It was subsequently agreed that components of the Fifth Highway Program would include (a) the construction of six gravel roads to ICA construction standards (440 kilometers), (b) the asphalt surfacing of three roads constructed under previous programs (430 kilometers), technical assistance for the local contracting industry and purchase of equipment for emergency road maintenance, the latter based on preliminary results of the Harris Study. A.I.D. agreed to provide financing in the amount of \$9.3 million for construction and supervision of the asphalt surfacing of three roads (\$6.8 million) and the purchase of emergency maintenance equipment (\$2.5 million). IDA funding in the amount of \$17.0 million was provided to assist in financing the remainder of the program.

For the three asphalt paving projects to be financed by A.I.D., bids were received December 1973 from Grove/Skanska (a U.S. - Ethiopian joint venture) and Nello Teer for \$26.36 million and \$37.38 million, respectively. These amounts compared with the construction cost estimate in the June 1972 capital assistance paper (and subsequently reviewed by Harris consultants in October 1973) of \$9.5 million, against which \$6.4 million of A.I.D. loan funds were earmarked. Bids received by the Bank for the construction of feeder roads were also substantially in excess of cost estimates. An evaluation of the bids for A.I.D. work revealed the following basic reasons for the higher than estimated prices: (1) sharply increased POL costs, (2) increased equipment costs, (3) lack of clarity in certain bid specifications which caused bidders to include sizeable contingencies, (4) general uncertainties due to world-wide rising material costs and high rates of inflation, and in retrospect, (5) generally less than satisfactory cost estimating.

Because of the magnitude of the funding shortfall, it was not possible to negotiate adequate reductions with the bidders. Moreover, increasing the A.I.D. loan was not considered a viable option since putting substantial new funds into highway construction was viewed as being out of phase with the strategy being developed for the country DAP. The EHA's proposal for a management contract under which a contractor would organize, manage and supervise force account construction by EHA, was also rejected since it would direct EHA's resources to primary road construction which both the Bank and A.I.D. considered essential for feeder road construction and road maintenance. Following further consultations among the donors and the GOE, agreement was reached in principle that certain trade offs could be made between components of the Fifth Highway Program and the Sixth Highway Program (currently being developed by the Bank and GOE). As a result, it is now proposed (1) to shift maintenance equipment purchases, originally planned for the Sixth Highway Program, to the current program, with financing provided by A.I.D., GOE, West Germany and U.K., (2) to use a portion of IDA funds originally programmed for Sixth Highway to instead finance two of the six feeder roads under Fifth Highway, and (3) to fund a portion of the three asphalt surfacing projects under the Sixth Highway Program. The final makeup of the Sixth Highway Program is expected to be known by the end of 1974 when the Bank appraisal is finished and negotiations have been held with the GOE.

C. Borrower and Implementing Agency

The Borrower is the Government of Ethiopia (GOE). Administration and implementation is the responsibility of the Ethiopian Highway Authority (EHA), a semi-autonomous government agency established in 1951 in conjunction with the inception of the First Highway Program. The EHA is governed by a Board of Commissioners consisting of the Minister of Public Works who serves as Chairman, the Vice Minister of Commerce, Industry and Tourism, the EHA General Manager who is also executive head of EHA, and one other member-at-large. The EHA was organized under the Fourth Highway Program with the assistance of management consultants financed by the World Bank. EHA's organization and operational capabilities are discussed further in Section II.D.1 below.

D. Relationship of Amendment to A.I.D.'s Strategy in Ethiopia

The recently approved DAP for Ethiopia calls for emphasis on rural development as the priority for A.I.D.'s economic assistance strategy. The Fifth Highway loan was authorized prior to the approval of this DAP. Nevertheless, the linkage between road maintenance and rural agricultural development can be demonstrated.

The construction and maintenance of a well integrated road system, including both primary and feeder roads, is essential to the development of the Ethiopian economy in general, and the agricultural sector in particular. During the first three Development Plan periods, emphasis was placed on the construction of primary roads. Consequently, less attention was given to constructing feeder roads which would provide the rural population access to distant agricultural markets, extension services, etc., and in general, would contribute to rural agricultural development activities in Ethiopia. As indicated above, the GOE has carried out several road construction activities in its attempt to increase the rural road network in Ethiopia. However, in order for these roads to be operable and serve the rural population, it is imperative that a well equipped and administered road maintenance program be initiated. Failure to properly maintain Ethiopia's existing road system concurrent with the construction of feeder roads would not only deny the rural population its only means of access to and communication with other areas of the country, causing even greater isolation than is now the case, but would also impede the development of the agriculture sector and, therefore, the economy.

To this end, A.I.D. financed a road maintenance study to develop a five year plan of action for the improvement of highway maintenance and for the rehabilitation of road sections requiring urgent attention. A thorough evaluation of the EHA (organization, administration, operations, work practices and human and physical resources) and the Ethiopia road system was made to determine the required adjustments within EHA to make it more efficient and to determine the necessary highway rehabilitations that would render the road network more operable. This amendment addresses some of the equipment requirements reported in that study.

II. TECHNICAL ANALYSIS

A. Amended Project Description

Because of the shifting of project components noted in Section I.B. above, the Fifth Highway Program, which was used as the basis for defining the

project under the original loan, has at least temporarily lost its precise identity. Similarly, for somewhat the same reasons, the parameters of the Sixth Highway Program are still not clearly defined. For these reasons and for purposes of this amendment, the A.I.D. project is redefined in terms of providing equipment for the more discrete road maintenance portion of the overall Fifth and Sixth Highway Programs, as set forth in the F.R. Harris Study of Road Maintenance in Ethiopia.

The Harris Study was undertaken in 1972 with A.I.D. financing at the request of the Ethiopian Government in order to develop a comprehensive five-year plan of action for the improvement of highway maintenance and for the rehabilitation of road sections requiring urgent attention. The program established in the Final Report, dated June 1973, as well as the consultant's recommendations for administrative and operational improvements, have been accepted by the Ethiopian Government and the Highway Authority as the basis for its near term maintenance program. Copies of the report have been distributed to district managers for familiarization with recommendations on its contents, as well as for consideration of its analytical techniques.

In conjunction with its assessment of total maintenance requirements, the Harris Study developed a list of additional equipment needed to carry out an effective program of maintenance over a five-year period. Of the 4 equipment units recommended by Harris, a portion is currently on order as part of the "emergency" procurement package being funded by A.I.D. (\$2.5 million) and with funding provided by the U.K. The proposed amendment, along with additional financing from the GOE, West Germany and the World Bank, would permit the EHA to acquire the remaining priority units of equipment.

B. Maintenance and Equipment Requirements

1. Recommended Maintenance and Rehabilitation

After examining the present and projected road maintenance program in Ethiopia and applying prescribed tests of economic priorities and financial capacities, the Harris Study concluded that all segments of the present highway system should continue under EHA maintenance. These included (as of 1973) 2,488 km. of paved roads and 4,867 km. with gravel and earth surfacing in existence, plus another 3,811 km. under construction or planned for construction within the five-year program period. The majority of these segments passed the economic tests applied by the Study; those that did not were nevertheless included because any other course of action was judged to be politically untenable.

In addition to normal maintenance, the Harris Study also identified nine sections of roads totalling 1,279 km. (426 km. paved, the balance gravel surface) requiring rehabilitation. After maintenance and rehabilitation requirements had been so identified, a study was made of the resources needed to carry out the program.

2. Equipment Units Recommended

a. Existing Fleet: At the time of the Harris Study in 1972, an examination of EHA records, as well as physical inspections of facilities, identified some 825 major units of serviceable or repairable equipment. Of these, 607 were being used by maintenance forces and 218 were assigned to construction. After reviewing the age, condition and maintenance of the existing equipment, an estimate was made of the principal units of maintenance equipment which would be in serviceable or repairable condition during the five-year program period. An average "availability factor" (percentage of normal annual working hours during which an unit would be operational) of 65 percent was assumed, based on the consultant's appraisal of organization operation, the probable mix of old and new equipment, historical availability, and the basic machine types identified as necessary for the recommended maintenance program.

b. New Units Required: After the recommended road maintenance program was established, calculations were made by the consultant, based on standard crews of equipment and labor with specified production rates for the kinds of work to be done, to develop a total mix of required equipment units for use by year over the five-year period 1973 to 1978. New units required for the five-year program thus were represented by this total less the units estimated to be available from the existing fleet of maintenance equipment. Annex A, Table 1 lists the units recommended by Harris, the equipment units now on order, and the equipment which EHA proposes to purchase with the proceeds to be made available by this loan amendment, with West German financing, World Bank and from its own budget resources. These proposed purchases reflect EHA's assessment as to which units of the unordered Harris equipment list are critical to its road maintenance program. In this connection it is EHA's judgment (endorsed by A.I.D. and the World Bank) that its current emphasis on greater use of labor intensive methods, as well as efforts to achieve more effective equipment utilization, will permit it to forego purchase of certain items (the difference between unordered and priority needs) without jeopardizing the maintenance program.

C. Spare Parts Requirements

If full benefits are to be obtained from the equipment proposed for purchase, an available and timely supply of spare parts is required to insure maximum equipment utilization and extended equipment service life. The loan will provide funding in the amount of approximately \$550,000 for the purchase of spare parts for the new equipment. Of this amount approximately 75% of the funds will be utilized to purchase fast moving spare part items associated with the purchase of the equipment. The remaining 25% of the funds will be utilized for the purchase of identifiable equipment spare part components to coincide with the equipment arrival on site. This second group of spares, also to be ordered with the equipment, will be drawn up with the assistance of the U.S. equipment specialists now on site under the Highway Equipment and Repair Facilities loan. Using the extensive knowledge and experience of

these specialists rather than relying on the standard manufacturer recommended spares list is expected to minimize the accumulation of an inventory of obsolete and/or unusable parts. Finally using this procedure, rather than a system whereby parts would be ordered on an as-needed basis will also assure that disbursement under the loan amendment is completed within a three-year period.

D. EHA's Ability to Carry Out Amended Project

1. Organization of EHA

The EHA headquarters is in Addis Ababa. Its facilities include an administration building, warehouse, component rebuild shop, materials testing laboratories, training center with equipment repair facilities at nearby Alem Gena. Field operations are carried out through nine district centers, each with its own administrative offices and equipment maintenance shops, district maintenance engineer, district warehouse and warehouse supervision and district equipment superintendent, all under a district manager. EHA presently has approximately 9312 employees, including 5578 regular employees and 3734 day laborers.

From its inception in 1951 until mid-1963, the management and engineering staff of EHA were assisted by the U.S. Bureau of Public Roads under a World Bank-financed management contract. In 1963, EHA management was assumed by Ethiopians, with support from foreign managerial and technical advisors. Ethiopianization of EHA's staff is continuing, with the number of foreign advisors now totalling 13, including 12 technicians provided by A.I.D. financing and 1 provided by the World Bank. It is now anticipated that the A.I.D.-financed equipment repair technicians (under A.I.D.'s loan for Highway Equipment and Repair Facilities) will be phased out by mid 1975. At the same time, it is understood that the World Bank will be phasing in technicians to assist in the continuation of equipment maintenance and equipment operations, as part of the Sixth Highway Program.

In 1966, the organization and administration of EHA was evaluated by a U.S. management consulting firm, Public Administration Service (PAS), with World Bank financing. The PAS contract was extended under the Fourth Highway Program at the request of EHA to assist in carrying out PAS recommendations for organizational changes designed to increase EHA's administration and operational efficiency. The PAS recommendations have generally been adopted, although certain implementation difficulties particularly in the Equipment and Supplies Division resulted in a further extension of the PAS contract to June 1974, and the provision of two technicians under the EHA credit for the Fifth Highway Program. While making some further recommendations for administrative and operational improvement, the Harris Study, in its 1972 review of EHA, concluded that "the present organization structure is basically sound and easily capable of providing direction for the highway program of Ethiopia".

2. Road Maintenance Operations

Road maintenance is performed by the District Organization of the Operations Division, under the overall supervision of the Chief of Operations, assisted by a maintenance staff 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 150 km of asphalt and 120 km of gravel road.

The Harris Study, having been generally accepted by the EHA, now forms the basis for the current five-year maintenance program for the Ethiopian highway system. As such, it provides the EHA with a determination of administrative, operational, and resource requirements needed to perform routine and periodic maintenance, as well as rehabilitation of seriously deteriorated road sections. Further, the EHA has agreed, in conjunction with negotiations for the IDA Fifth Highway Credit, to implement the recommendations of the Study. With respect to the Operations Division and the District Offices, these included recommendations for: (i) improving line/staff authority between the Operations Division and the District Engineers, (ii) placing of professional engineers in Assistant District Engineer positions, and (iii) creation of "maintenance sub-districts" in those large districts where one or more of these units is justified in remote locations. At the EHA's request, the IDA credit is also providing two experts to assist in the improvement of road maintenance organization, operations and techniques and in the implementation of the recommendations of the Harris Study.

3. Equipment Maintenance Operations

Pursuant to recommendations made by PAS in 1970, previously fragmented responsibilities for equipment management and maintenance have been consolidated under the Supply and Equipment Division of EHA. In addition, a number of other actions were taken to upgrade and strengthen the management and effectiveness of the Supply and Equipment Division, including the following measures: (i) development of formal policy and procedure manuals, (ii) development of staffing standards for the division and its branches, (iii) establishment of policies and standards for use of rebuilt components, (iv) employment of a highly qualified expatriate to administer the new division, (v) assignment of an Ethiopian equipment engineer to serve as an "understudy" to the expatriate Chief of Division and (vi) assignment of expatriate AID-financed technicians to assist in reorganizing and improving equipment maintenance. This latter project is financed under the A.L.D. loan for Highway Equipment and Repair Facilities (HEERF) which also included funds for tools, spare parts and training, was initiated in 1971 and has produced highly satisfactory results. As regards to the project manager there are currently several personnel assigned to EHA. These include a rebuild specialist, mechanic and vehicle designer.

the Component Shop, a supply specialist at the Central Warehouse, and mechanics at District Shops. Primarily as a result of this technical input, the average deadline percentage has been reduced from 75 percent to 25 percent for the overall EHA equipment fleet, an acceptable level by most industry standards.

EHA now has nine district shops and a component rebuild shop, all of which are housed in new or remodeled buildings, with each shop containing 80 percent or greater new shop or component rebuild equipment as provided under the HEKF loan. With these facilities plus the technical assistance support provided by the U.S. equipment specialists, an above-average capability exists at EHA for maintenance and repair of the equipment to be purchased under this loan amendment.

III. Economic Analysis

In its preliminary appraisal for the Sixth Highway Program, the World Bank concluded that the procurement of highway maintenance equipment showed the highest priority among the various components of the project. The Bank analysis, using data developed by the Harris Study, is considered reasonable, and as is apparent from the following summary provides adequate economic justification for the proposed amendment. Because the purchase of maintenance equipment represents an investment in improved road maintenance, the economic benefits of the equipment are viewed in terms of the benefits attributable to road maintenance. The maintenance effort assumed by the Harris Study is the minimum necessary for preserving constructed roads at their original standards and the provision of no more than average standards of condition safety and comfort.

The primary benefits to be gained from road maintenance are savings in vehicle operating costs for existing and projected traffic, which is expected to grow at an estimated average of 6.3 percent per annum, ranging from 2 percent to 10 percent, depending upon the particular road section involved (protecting original capital investment and minimizing adverse environmental impact).

To quantify benefits, operating costs were estimated for different types of vehicles on paved, gravel and earth roads in varying conditions (normal to worst), depending on the level of maintenance input. Operating costs with optimum maintenance are shown in Annex B.

Road user costs were compared with those expected with improved maintenance following the availability of additional equipment units. Initial rehabilitation to original standards produce a considerable

* without the equipment and based on Harris' road condition inventory and increasing over time because of further deterioration of the network.

duction in vehicle operating costs which remain at approximately the same level thereafter with proper maintenance. The resulting benefits, increasing over the eight-year economic life of the project (average expected life of equipment), were applied to the increasing traffic volumes over the same period to generate total benefits.

On this basis, the cost and benefits, net of taxes and duties, yield a benefit-cost ratio of 1.6 (at a discount rate of 10 percent) and an internal rate of return of 24 percent. Sensitivity analyses to determine the effect of changes in benefits and costs and of shadow pricing produced the following results: If costs are increased by 10 percent and benefits reduced by 15 percent, the rate of return is still a satisfactory 16 percent; if all foreign exchange costs and earnings are valued upward by 33 percent to reflect the shadow exchange rate, the resulting rate of return is 21 percent.

In this Bank analysis, which updates the Harris data, about 33 percent of the benefits are in the form of decreased fuel demand because of better road conditions and, on this basis, using the February 1974 fuel prices, a saving in foreign exchange of approximately U.S. \$0.6 million can be expected in year one, increasing to U.S. \$1.8 million year eight.

Labor Intensive Methods

"In nations where heavy road equipment is not manufactured, where the pool of skilled operators and mechanics is limited, and where there may be a seasonal or perennial excess of unskilled workers, there is an obvious economic need to limit machine methods in road construction and maintenance, and to favor labor intensive procedures. The need is reinforced when fuels and lubricants also consume foreign exchange and where distance from suppliers complicates the procurement of spare parts for equipment".* Thus, one of the mandates of the Harris Study was to recommend appropriate work methods (machine intensive methods versus labor intensive methods) of road work with a view of maximizing the employment created in a five year maintenance program, subject to minimum losses in work efficiency. In arriving at recommended work methods, the consultant took into consideration a variety of factors including labor availability, costs of fuels and lubricants, standards and quality of results required, work time involved, and, to a certain extent, established EHA practices. On one hand, jobs which were traditionally done by hand would require a major discharge of labor and large acquisitions of equipment to make those jobs machine intensive. Cost of acquiring the equipment would be a major deterrent to such a change. On the other hand, jobs which were traditionally machine intensive would require substantial losses in work efficiency to make those jobs labor intensive. Machine intensive operations were recommended wherever there was clear cost advantage over more labor intensive operations or the use of labor work to be performed made it clearly impractical to accomplish the work by hand labor. See Annex D for a summary of the

* Road Maintenance Study - Ethiopia - F. R. Harris, Inc. P. 211-7

recommended methods for various maintenance functions. The equipment to be financed under this loan is based on these recommendations contained in the Harris "Road Maintenance Study" final report.

IV. Financial Analysis

A. Total Requirement

Total capital requirements for carrying out a maintenance portion of the Fifth Highway Program which would be consistent with the five-year program recommended by the Harris Study are estimated as follows: (See Section B below and Annex A for details)

Equipment on order:

A.I.D. Loan	\$ 2,500,000
U.K.	1,200,000

Equipment to be purchased:

A.I.D. Loan Amendment	\$ 6,800,000
GOE Budget	2,000,000
West Germany	<u>4,500,000</u>
TOTAL	\$17,000,000

Recurrent expenditures for the five-year Harris program were estimated at \$70.3 million for maintenance and \$16.0 million for rehabilitation based on 1972 prices for a total of \$86.3 million. No attempt has been made to adjust these figures to 1974 prices which, given recent rates of inflation and price increases, would make them considerably higher. After examining historical EHA maintenance expenditures, both in absolute and as a percentage of total government budgets, and taking into consideration the availability of projected road user revenues, the Harris Study concluded that there should be no internal constraints to financing recurrent budget levels of the order of magnitude projected for the five-year program. While the facility of financing may be somewhat hampered by the increased level of requirements, the conclusion reached by Harris is considered to remain valid, given (a) corresponding increases in road user revenues and (b) the GOE's continued commitment both to itself and to major international donors to carry out the maintenance program envisioned by the Harris Study.

B. A.I.D. Component

The proposed amendment will permit utilization of up to \$6.8 million for purchase of the following units of maintenance equipment:

* This amount is approximate since certain expenses were incurred under the Harris contract for bid evaluation and construction supervision prior to its termination.

<u>Item**</u>	<u>No. of Units</u>	<u>Estimated PAS Unit Price</u>	<u>Total Price</u>
Grader	2	50,000	100,000
Loader	47	57,000	2,679,000
Tractor	6	110,000	660,000
Asphalt Truck	4	45,000	180,000
Conveyor	4	15,000	60,000
Aid Compressor	4	80,000	320,000
C&S Plant	1	300,000	300,000
Truck-Tractor	8	80,000	640,000
			<u>4,939,000</u>
Shipping and Insurance (20%)			988,000
Spare parts (11%) (acquisition cost)			550,000
Contingency			<u>323,000</u>
	TOTAL		6,800,000

The unit prices used in the above table are based on current 1974 prices adjusted for escalation between now and the placement of firm orders. In most cases, the unit prices used reflect information furnished by equipment dealers, AID/W and recent bidding experience in the Sudan and Ethiopia. Escalation factors usually vary from 5 to 15 percent depending on the type of equipment involved.

In the event the final cost of the above list exceeds the fixed amount of loan funds available, a downward adjustment will be required in the number of units purchased if other non-AID financing is not available. Further, while this will be the list of equipment included in the IFB, it is expected that once bid results have been evaluated, adjustments may be required in the actual numbers of units to be purchased.

C. Borrower Contribution

For purposes of this amendment, the requirement for a borrower contribution, in addition to coverage of taxes and inland transportation charges related specifically to the A.I.D. equipment purchases, is considered to be satisfied by the GOE's funding of recurrent maintenance expenditures (note above) its funding of equipment purchases (\$2.0 million), as well as its sizeable investment in existing maintenance plant and equipment, roughly estimated to be on the order of \$22 million as of 1973. While Section 110a of the FAA was enacted subsequent to the original authorization of this loan, it can nevertheless be readily demonstrated that the GOE's

** More detailed specifications are provided in Annex

contribution is considerably in excess of 25 percent of the total capital and recurrent budget for the maintenance program to be supported by this amendment.

V. Other Considerations

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

This proposed amendment will benefit U.S. business interests and the U.S. balance of payments, since all procurement of road maintenance equipment under this loan is expected to be from the U.S.. Further benefits will come from future purchases of spare parts and additional equipment, as a result of increased EHA standardization of U.S. equipment.

B. Effect on Private Enterprise

Although the proposed amendment will finance a public program, the primary beneficiaries will be private, both in the U.S. and in Ethiopia. The loan funds will be available to finance purchases from private firms, virtually all of which are likely to be U.S., while project benefits will accrue principally to road users in Ethiopia's private sector.

C. Environmental Impact

A large portion of maintenance on existing roads is to assure proper drainage and prevent loss of road surface and embankment through erosion. The unprotected surfaces continually exposed on unsurfaced roads are subject to erosion, especially on steep grades and side hills. Maintenance, if properly accomplished, prevents or reduces such erosion and protects the side ditches by cleaning where necessary or providing check dams and paving to prevent the alteration of the road cross section. Therefore, proper road maintenance has a positive impact on the environment and lack of maintenance can have an extremely detrimental effect on the environment, especially in soils such as those encountered in Ethiopia which have been eroding for centuries.

VI. Implementation

As in the case of the "emergency" road equipment contracts under this loan, procurement for the proposed amendment will be the responsibility of EHA's own Procurement Branch. IFB's and awards will be subject to prior A.I.D. approval.

The projected schedule for authorization and implementation is as follows:

Authorization of Loan Amendment
CBD Advertisement

November 1971
December 1971

A.I.D. Approval of Bid Documents	December 1974
Execution of Loan Agreement	December 1974
Issuance of IFB	January 1975
Satisfaction of Conditions Precedent	January 1975
Award of Bids	April 1975
Delivery of Equipment	June 1976 to June 1977
Terminal Disbursement Date	January 1978

VII. Evaluation

An annual evaluation will be prepared during the implementation phase of this project and a final evaluation report will be made at the time the project is closed out. The project will be evaluated in terms of both the equipment input and the EHA maintenance program. Indicators will be developed to measure progress of arrival of equipment on site, utilization of equipment, maintenance and repair of equipment, miles of road rehabilitated and implementation of the Harris Study recommendations. Evaluation of the EHA maintenance program will require coordination among the several donors making contributions to the highway program in general and to maintenance in particular. In this respect it is expected that the world bank, as the largest donor, will play a major role in evaluation.

NEW EQUIPMENT REQUIREMENTS FOR EHA ROAD MAINTENANCE PROGRAM

No.	Item	Recommended by Harris	On Order		GOE 1974/5 Budget	Unordered	Priority Needs	To Be Purchased		IBRD Loan
			AID Loan	U.K. Loan				AID Amendment	W. German Loan	
1.	Grader, 125HP	30	20	-	8	2	2	2	-	-
2.	Dump Truck	120	20	-	16	84	84	-	84	-
3.	Front-end Loader	85	10	10	3	62	47	47	-	-
4.	2½ Tow Truck	29	-	5	-	24	-	-	-	-
5.	9-10 Tow Roller	55	3	-	4	48	33	-	-	33
6.	Water Truck	29	4	-	3	22	12	-	-	12
7.	Crawler Tractor	13	5	2	-	6	6	6	-	-
8.	Asphalt Trolley	14	-	4	3	7	4	4	-	-
9.	Spreader	3	-	-	-	3	-	-	-	-
10.	Conveyor	4	-	-	-	4	4	4	-	-
11.	Air Compressor	7	-	3	-	4	4	4	-	-
12.	Crushing Plant	1	-	-	-	1	1	1	-	-
13.	Truck Trailer	10	-	-	-	10	8	8	-	-
14.	Pick-up Truck	-	11	16	-	-	-	-	-	-

EQUIPMENT TO BE PURCHASED UNDER AID LOAN AMENDMENT

<u>No.</u>	<u>Item</u>	<u>Qty.</u>	<u>1/F.A.S. Price Each U.S. \$</u>	<u>Total Price U.S. \$</u>
1.	Grader, 125 H.P.	2	50,000	100,000
2.	Front end loader track or wheel 1½ - 3 cu. yd.	47	57,000	2,679,000
3.	Tractor, Crawler, 180 H.P.	6	110,000	660,000
4.	Asphalt Distributor	4	45,000	180,000
5.	Conveyor, Belt, Motor Drivers	4	15,000	60,000
6.	Air Compressor, 600 CFM w/Track Drill	4	80,000	320,000
7.	Crushing and Screening Plant 225 T.P.H.	1	300,000	300,000
8.	Truck Tractor w/50 Ton Lowboy	8	80,000	640,000
			Sub-Total	4,939,000
9.	Shipping and Insurance @ 20%			988,000
			Sub-Total	5,927,000
10.	Spare Parts @ App. 11% Equipment Acquisition Cost			647,970
			Sub-Total	6,574,970
11.	Contingency			250,000
			Total	7,824,970

1/ F.A.S. price per unit of equipment has built in escalation price factor to March, 1975.

ANNEX A
TABLE 3

ESTIMATED COST OF EQUIPMENT TO BE PURCHASED WITH NON-AID FUNDS

No.	Item	FAS	G. O. E.		West Germany		I. B. R. D.	
		Unit Price	Units	Cost	Units	Cost	Units	Cost
1.	Grader	50,000	8	400,000	-	-	-	-
2.	Dump Truck	42,000	16	672,000	84	3,528,000	-	-
33.	Front-end Loader	57,000	3	171,000	-	-	-	-
5.	Roller	20,000	4	80,000	-	-	33	660,000
6.	Water Truck	36,875	3	110,625	-	-	12	442,500
88.	Asphalt Truck	37,500	3	<u>112,500</u>	-	-	-	-
				<u>1,546,125</u>		<u>3,528,000</u>		<u>1,102,500</u>
	10% Spares			154,612		352,800		110,250
	20% Shipping			<u>309,225</u>		<u>705,600</u>		<u>220,500</u>
				<u>2,009,962</u>		<u>4,586,400</u>		<u>1,433,250*</u>

*World Bank activity scheduled \$1.8 million for maintenance equipment under its Sixth Highway Program.

ANNEX B
TABLE 1

ROAD INVENTORY 1965-1974
(Km)

<u>Fiscal Year</u>	<u>All-Weather Asphalt</u>	<u>Roads Gravel^{1/}</u>	<u>Service Roads^{2/}</u>	<u>Total</u>	<u>Dry-Weather Trails</u>	<u>Total All-Weather Roads and Dry-Weather Trails</u>
1965	1,455	3,869	137	5,461	17,539	23,000
1966	1,526	3,778	451	5,755	17,245	23,000
1967	1,868	4,257	657	6,782	16,218	23,000
1968	1,875	4,666	626	7,167	15,333	23,000
1969	1,942	4,805	626	7,373	15,627	23,000
1970	2,009	4,943	626	7,578	15,422	23,000
1971	2,078	5,341	626	8,045	14,955	23,000
1972	2,204	5,474	452	8,130	14,870	23,000
1973	2,481	5,268	556	8,305	14,055	23,000
1974	2,897	4,922	856	8,675	14,325	23,000

^{1/} Surfaced with Crushed Stone.

^{2/} Surfaced with Select Material.

Source: P.R. Harris Inc. Consultants, and Highway Authority
(Table prepared by IBRD Staff)

VEHICLE FLEET, FY 1968-1973
(Units)

<u>Fiscal Year</u>	<u>Cars</u>	<u>Buses</u>	<u>Trucks</u>	<u>Pick-ups</u>	<u>Trailers</u>	<u>Total</u>
1968	30,200	2,535	2,450	1,920	1,770	38,875
1969	33,500	2,730	2,750	2,200	1,780	42,960
1970	34,500	2,900	3,000	2,430	1,800	44,630
1971	36,000	2,975	3,350	2,660	1,830	46,815
1972	38,000	3,240	3,800	2,820	1,920	49,780
1973	41,000	3,400	4,250	3,000	2,000	53,650
<u>Average Annual Growth %</u>						
1968/73	6.3	6.0	11.6	9.3	2.5	6.7
1972/73	7.9	4.9	11.8	6.4	4.2	

Source: Planning Commission Office, Ministry of Planning,
(Table prepared by IBRD Staff)

ANNEX B
TABLE 3

ECONOMIC VEHICLE OPERATING COSTS
(Ethiopian Cents/km)

<u>Paved Road</u>	<u>Truck/Trailer</u>	<u>Truck</u>	<u>Bus</u>	<u>Car</u>
Flat	48.92	27.85	33.62	9.81
Rolling	83.16	41.78	50.43	10.79
Mountainous	97.84	51.52	62.20	11.77
<u>Gravel Road</u>				
Flat	62.55	35.42	42.89	12.73
Rolling	106.33	53.13	64.34	14.00
Mountainous	125.10	65.53	79.35	15.25
<u>Earth Road</u>				
Flat	84.31	47.49	57.10	13.06
Rolling	143.32	71.24	85.65	17.20
Mountainous	168.62	87.86	105.64	19.11

Source: IBRD Appraisal Mission, based on "Road Maintenance Study."
No value has been assigned to non commercial drivers and passengers time. (Table prepared by IBRD Staff).

ANNEX B
TABLE 4

MAINTENANCE COSTS AND BENEFITS

<u>FY</u>	<u>Capital Cost</u>	<u>Increased Recurrent Maintenance Costs</u>	<u>User Benefits</u>
1976	23,770		
1977		800	3,746
1978		820	7,492
1979		365	8,069
1980		388	8,690
1981		410	9,359
1982		438	10,080
1983		466	10,856
1984		495	11,692
			24.5%
			21.5%
			16.5%
			11.3%

Source: Table prepared by IBRD Staff.

Annex C

AID Loan No 663-H-023

Capital Assistance Paper No AID/DLC/P-

Project No 663-22-311-177

CAPITAL ASSISTANCE LOAN AUTHORIZATION AMENDMENT

for

Ethiopia - Fifth Highway Program

Pursuant to the authority vested in the Administrator of the Agency for International Development by the Foreign Assistance Act of 1961, as amended, and the delegations of authority issued hereunder, I hereby amend the Capital Assistance Loan Authorization, dated June 23, 1972, for the subject project, as follows:

1. by deleting the last four lines in the first sentence of the said Authorization and substituting the following in lieu thereof:

"financing foreign exchange costs of the procurement of road maintenance and of engineering services in regard to the procurement of spare parts and construction services to improve three primary roads";
and

2. by deleting the words "from Ethiopia and" where they appear in sub-paragraph 3(a) of the said Authorization.

In all other respects, the said Authorization is hereby ratified and confirmed.

Assistant Administrator for Africa

Date: _____

His Excellency Ato Negash Desta
Minister for Finance
Ministry of Finance
Government of Ethiopia
Addis Ababa, Ethiopia

Dear Mr Minister:

Subject: A.I.D. Loan No 663-H-023
Fifth Highway Project
Implementation Letter No 3

This letter is intended to facilitate the procurement of additional road maintenance equipment as provided for by the First Amendment to the Loan Agreement. Nothing in this letter and its attachments alters the scope of the Loan Agreement as amended or the terms of the specific sections of the Loan Agreement as amended that are referred to or explained in this communication.

I. CONDITIONS PRECEDENT TO DISBURSEMENT OF LOAN PROCEEDS

Because this Amendment represents a major change in the purpose for which remaining loan funds are to be used, a new legal opinion will be required in accordance with Section 4(a) of the Amendment. Attachment A, Guide for Counsel of Borrower Government, is provided for assistance in preparing the opinion. Please note that under Section 4(b) the terminal date for the satisfaction of this condition is sixty (60) days from the date of the Amendment.

It is recognized that under the original Loan Agreement funds have already been committed and/or disbursed for equipment purchases and for engineering services. With respect to the latter, it is further recognized that additional disbursements may be required in connection with the termination of the Harris contract for technical services and supervision of construction. Finally, it is noted that the maximum amount available for the purchase of

additional road maintenance equipment as provided for under this Amendment will be \$6,800,000, less the amount disbursed in connection with services rendered by Harris.

II. PROCUREMENT OF EQUIPMENT AND SERVICES

a. Procurement of additional road maintenance equipment will be subject to the same procedures as set forth in Sections V and VI of Implementation Letter No 1. Attachment B, A.I.D. Capital Project Guidelines for Borrower Procurement of Equipment and Materials, is also provided for your assistance for procurement of the equipment.

b. In connection with Section 5.06 of the Amendment, A.I.D. at present does not require submission for its approval of any bid documents, plans, schedules, contracts, etc., which will not be financed under the loan. A.I.D., however, may request from time to time that copies of certain such documents be submitted for informational purposes.

For all goods and services financed under the Loan, A.I.D. requires that it be furnished for advance approval, all relevant plans, schedules, bid documents and proposed contracts.

III. REPORTING REQUIREMENTS

With the exception of monthly progress reports, other reports described in Section IV of Implementation Letter No 1 (quarterly progress and quarterly shipping reports), will continue to be required.

IV. DISBURSEMENT PROCEDURES AND DOCUMENTATION

In addition to disbursement documents presently outstanding, A.I.D. anticipates the issuance of one or more letters of commitment to assist in financing the foreign exchange costs of road maintenance equipment as provided for under the Amendment.

Letter of Commitment Procedures, which remain unchanged from the original loan, are described in Attachment C.

V. CORRESPONDENCE

All documentation, reports and correspondence concerning this loan should be forwarded to the A.I.D. East Africa Regional Economic Development Services Office (REDSO/EA) through our A.I.D. Mission in Addis Ababa, with two copies provided for REDSO/EA and one for our A.I.D. Mission.

VI. BORROWER'S REPRESENTATIVES

It is pointed out for your convenience that Section 8.02 of the Loan Agreement requires the Borrower to notify A.I.D. in writing of any change in the identity of the Borrower's primary representative, the Minister for Finance, or of any change in other representatives designated by the Minister. Specimen signatures of any new representatives are also required.

We will be pleased to discuss with you or your representative any aspect of the project, or any matters relating to this letter or the attachment hereto.

Sincerely yours

Edward B. Hogan
Director

D R A F T

FIRST AMENDMENT

The Loan Agreement dated the 31st day of January, 1972, between the Government of Ethiopia ("Borrower") and the United States of America, acting through the AGENCY FOR INTERNATIONAL DEVELOPMENT ("A.I.D.") is hereby amended as follows:

1. Sections 1.01, 1.02, 1.03 and 1.04 are deleted in their entirety and the following new Section 1.01, 1.02 and 1.03 are substituted in lieu thereof:

"SECTION 1.01 - The Loan. A.I.D. agrees to lend to the Borrower pursuant to the Foreign Assistance Action of 1961, as amended, an amount not to exceed Nine Million Three Hundred Thousand United States Dollars (US\$9,300,000) ("Loan") to assist the Borrower in carrying out the Project referred to in Section 1.02 ("Project"). The Loan shall be used exclusively to finance the foreign exchange costs of goods and services required for the Project ("Foreign Exchange Costs"). The aggregate amount of disbursements under the Loan is hereinafter referred to as "Principal".

"SECTION 1.02 - The Project. The Project to be financed by the Borrower and A.I.D. consists of the procurement and effective utilization of road maintenance equipment for the Borrower's Highway Authority, together with certain engineering services. The Project and the goods and services to be provided in connection therewith are more fully described in Annex A, Revision 1, attached hereto, which may be modified in writing and by Implementation Letters referred to in Section 8.03.

"SECTION 1.03 - Borrower's Contribution. The Borrower shall provide promptly as needed, all funds, in addition to the Loan, and all other resources needed for the punctual and effective implementation, operation and maintenance of the Project."

2. Section 2.03 is deleted in its entirety and the following is substituted in lieu thereof:

"SECTION 2.03 - Application, Currency and Place of Payment. All payments of interest and principal hereunder shall be made in United States dollars and shall be applied first to the payment of interest due and then to the repayment of Principal. Except as A.I.D. may otherwise specify in writing, all such payments shall be made to the Office of Financial Management, Agency for International Development, Washington D.C., 20523, U.S.A., and shall be deemed paid when received by the Office of Financial Management.

3. Section 3.02 is deleted in its entirety.

4. Prior to any disbursement under the Loan subsequent to this First Amendment, other than disbursements of funds for which A.I.D. has issued commitment documents or other disbursing authorizations prior to this First Amendment, the Borrower shall, except as A.I.D. may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D.:

a. An opinion of the Borrower's Minister for Justice or of other counsel satisfactory to A.I.D. that this First Amendment has been duly authorized or ratified by, and executed on behalf of, the Borrower and constitutes a valid and legally binding obligation of the Borrower in accordance with all of its terms;

b. Such other documents as A.I.D. may reasonably request.

Except as A.I.D. may otherwise agree in writing, if the conditions specified above are not satisfied within sixty (60) days from the date of this Amendment, A.I.D. may at any time thereafter terminate this Amendment by giving written notice to the Borrower. In the event of any termination under this paragraph, the Loan Agreement dated January 31, 1973, shall remain in full force and effect, except that in such event A.I.D. shall not be obligated to disburse any Loan funds for which it has not theretofore issued commitment documents or other disbursement authorizations.

A.I.D. shall notify the Borrower upon determination by A.I.D. when the conditions precedent to disbursement described above have been satisfied.

5. Section 4.01 (a) is deleted in its entirety and the following new Section 4.01 (a) is substituted in lieu thereof:

"(a) The Borrower shall carry out the Project with due diligence and efficiency, and in conformity with sound engineering, road maintenance, equipment maintenance, financial and administrative practices."

6. Section 4.06 (c) is deleted in its entirety and the following new Section 4.06 (c) is substituted in lieu thereof:

"(c) Road maintenance equipment to be financed under the Loan shall be used only for road maintenance purposes and not for construction projects whether carried out by the Borrower's own forces or otherwise."

7. Section 5.06 is deleted in its entirety and the following is substituted in lieu thereof:

"SECTION 5.06 - Plans, Specifications, and Contracts.

(a) Except as A.I.D. may otherwise agree in writing, the Borrower shall furnish to A.I.D. promptly upon preparation, all plans, specifications, procurement schedules, bid documents and contracts relating to the Project, and any modifications therein, whether or not the goods and services to which they relate are financed under the Loan.

(b) Except as A.I.D. may otherwise agree in writing, all of the plans, specifications and procurement schedules furnished pursuant to subsection (a) above shall be approved by A.I.D. in writing.

(c) All bid documents and documents related to the solicitation of proposals relating to goods and services financed under the Loan shall be approved by A.I.D. in writing prior to their issuance. All plans, specifications and other documents relating to goods and services financed under the Loan shall be in terms of United States standards and measurements, except as A.I.D. may otherwise agree in writing.

(d) The following contracts financed under the Loan shall be approved by A.I.D. in writing prior to their execution:

- i) contracts for engineering and other professional services,
- ii) contracts for such equipment and materials as A.I.D. may specify.

In the case of any of the above contracts for services, A.I.D. shall also approve in writing the contractor and such personnel as A.I.D. may specify. Material modifications in any such contracts and changes in any of such personnel shall also be approved by A.I.D. in writing prior to their becoming effective.

(e) Consulting firms used by the Borrower for the Project, but not financed under the Loan, and the scope of their services, shall be acceptable to A.I.D.

8. Section 5.08 is deleted in its entirety.

9. Section 6.02 is deleted in its entirety.

10. Section 6.05 is deleted in its entirety and the following is substituted in lieu thereof:

"SECTION 6.05 - Terminal Date for Disbursement. Except as A.I.D. may otherwise agree in writing, no Letter of Commitment, or other commitment documents which may be called for by another form or disbursement under Section 6.03, or amendment thereto, shall be issued in response to requests received by A.I.D. after one year from the date of satisfaction of conditions to disbursement and no disbursement shall be made against documentation received by A.I.D. or any bank described in Section 6.01 after three years from the date of satisfaction of conditions to disbursement, A.I.D., at its option, may at any time or times after three years from the date of satisfaction of conditions to disbursement reduce the Loan by all or any part thereof for which documentation was not received by such date."

11. Except as specifically modified and amended hereby, the Loan Agreement dated January 31, 1972, shall remain in full force and effect.

IN WITNESS WHEREOF, Borrower and the United States of America by their authorized representatives have executed this First Amendment on the _____ day of _____, 1974.

The Government of Ethiopia

The United States of America

By: _____

By: _____

Title: _____

Title: _____

Recommended methods for various maintenance functions: *

A. Routine Maintenance

- | | |
|--------------------------------------|--|
| o Surface patching, asphalt | Labor plus simple equipment |
| o Surface grading, gravel | Machine |
| o Brush control, all road types | Labor |
| o Culvert cleaning, all types | Labor |
| o Culvert repair, all types | Labor |
| o Primary ditch cleaning | Machine (5% by labor in flat
and rolling terrain; 100% by
labor in mountain) |
| o Secondary ditch cleaning | Labor |
| o Shoulder grading, asphalt
roads | Machine |
| o Bridge maintenance, all types | Labor |
| o Channel maintenance, all types | Machine |

B. Periodic Maintenance

- | | |
|----------------------------|------------------------------|
| o Seal coating, asphalt | Machine plus extensive labor |
| o Shoulder reconstruction | Machine |
| o Resurfacing gravel roads | Machine |

C. Special Maintenance

- | | |
|-------------------------|-------------------|
| o Retaining wall repair | Labor |
| o Excess brush growth | Labor |
| o Slide removal | Machine and Labor |
| o Flood repair | Machine and Labor |

* Source: F. R. Harris, Inc., "Road Maintenance Study - Ethiopia", pp. III-29-30.

D. **Supplementary Operations**

o **Truck Loading**

Machine

o **Aggregate production**

Machine plus extensive labor

ANNEX A - REVISION 1

Project Description

The Project consists of the provisions of goods and services under A.I.D. financing and by the Borrower in order to improve road maintenance in Ethiopia.

Including Project activities and disbursements occurring prior to this First Amendment, A.I.D. will provide up to \$9,300,000 to assist in financing the foreign exchange costs of the procurement of road maintenance equipment, spare parts for such equipment and procurement and commodity related services, as well as foreign exchange costs of engineering services performed prior to this First Amendment and associated with the procurement of construction services to improve three primary roads.

As part of the Project, the Borrower will utilize the equipment financed under the Loan for road maintenance purposes in a manner consistent with the five-year road maintenance program described in the "Road Maintenance Study - Ethiopia" of June 1973 prepared by Frederick R. Harris Company.

In addition to equipment procured under A.I.D. financing prior to the date of this First Amendment, within the remaining loan funds, A.I.D. will assist in financing only the following equipment:

<u>Item</u>	<u>Quantity</u>
1. Motor Grader	2
2. Front End Loader	47
3. Crawler Tractor	6
4. Asphalt Distributor-Relay Tanker	4
5. Conveyor Belt motor driven	4
6. Air Compressor	4
7. Crushing and Screening Plant	1
8. Truck Tractor	8
9. Spare Parts	
10. Shipping and Insurance Cost	