



ACTION MEMORANDUM TO THE MISSION DIRECTOR

FROM: Barry S. Burnett, Chief, Capital Resources Development Office

SUBJECT: Authorization of Rural Trails Project, Project No. 522-0137.

Action Needed: Your approval is requested of the attached Project Authorization (PAF) in accordance with redelegation of authorization authority to field Missions per State 141397, dated June 17, 1977, and State 231696, dated September 27, 1977, for small experimental or pilot projects and other projects with life-of-project funding up to \$500,000.

Discussion: The Mission review of the Project Paper for the \$400,000 Rural Trails grant project was held on February 1, 1978. The project will test the feasibility of low-cost construction techniques and a self-help community maintenance system for all-weather jeep trails built to serve isolated rural communities in Honduras. A.I.D. funds will finance technical assistance, commodities and other project implementation costs for construction, labor, supervision, and per diem. The PP issues identified at the review meeting are presented below with their resolution. The attached PP contains the corrections and additions indicated by the review session.

Issue: The Project design does not establish a reliable mechanism for effecting explicit linkages with other public services such as health, education and agriculture. It is largely assumed that such services will be provided once the jeep trails are constructed.

The Rural Trails project is basically a pilot effort to determine the feasibility specifically of trail building and trail maintenance techniques preliminary to possibly a larger-scale effort under the Agriculture Sector II Program. However, to maximize the potential social and economic benefits of the project, a formal procedure will be established to incorporate the planned or programmed services of other public and private agencies active in the Western region of Honduras into the trail selection process.

The 3-4 trails to be build during the first phase of the project have already been selected. For these, the Ministry will consult with the Coordinating Body for the Integrated Development Project of the Western Region (CONSUPLANE is coordinating the activities of INA, BANAFOM, the Junta Nacional de Bienestar Social, MNR, and COHDEFOR in this OAS-assisted project), the Honduran Coffee Institute, and other public and private agencies presently active in the region. These organizations will be advised of trail construction plans and will be requested to indicate, in writing, services planned or programmed along the selected trail sites.

Before the Phase I evaluation in November 1978, the Ministry should have developed a procedure for incorporating other agency programs into the selection methodology to be used for determining the sites of the remaining trails. A written record of all coordination efforts will be kept by the Ministry, and they will retain the administrative direction and control of the selection process throughout. The PP incorporates this change.

Issue: Will the fact that the bridges and culverts are designed to carry 15-ton vehicles encourage the usage of the trails by wider-gauged trucks substantially exceeding the lower tonnage tolerance of the trails?

The discussion indicated that although the bridges (with the exception of cable bridges) are to be constructed to withstand usage by vehicles of a much greater tonnage than are the trails, the narrow width of the trails will effectively prohibit passage of large heavy trucks. This design strategy will facilitate trail upgrading at a later date in the event larger truck transport is warranted by the area's development.

Issue: While the Project Paper outlines the procedures for delivery and storage of the foodstuffs to be used as partial payment for community labor, there is no indication that measures will be established to minimize or eliminate the potential for food diversion at the recipient level.

Given the relative isolation of the trail construction sites, it is unlikely that the food commodities will be diverted on a significant scale. CARE and the World Food Program will retain their normal monitoring responsibilities for the distribution of foodstuffs, and transportation, storage and distribution will be administered in accordance with the donor's procedures. The PP reflects this.

Issue: Is there a commitment by the Department of Labor Intensive Roads to promote and supervise maintenance programs after the 2-year project-construction phase, assuming no other arrangements develop during the life of the project?

The following has been added on page 41 of the PP and will be included in the Pro Ag: "The GOH will finance an inspector/promoter during the execution phase plus a minimum of three years thereafter, unless A.I.D. otherwise agrees in writing." The cost to the GOH for providing an inspector/promoter for the Community Maintenance System was increased from \$1,250 for 2 years duration to \$3,125 for 5 years duration. Cost figures were adjusted throughout the PP to reflect these changes.

Issue: Section 110 (a) of the Foreign Assistant Act requires that the recipient country contribute at least 25% of the costs of the program.

The Honduran contribution amounts to 23.8% of the total project costs and 31% of total project costs if the contribution of the World Food Program (WFP) is not included.

The Regional Legal Advisor, Barton Veret, has written a legal opinion to the effect that the 25% cost sharing requirements does not apply to the Rural Trails project as its financing is being provided in cooperation with another international organization; i.e., WFP.

The advisement was based on the February 20, 1974 legal opinion of Arthur Gardiner, A.I.D.'s then General Counsel, that FAA Section 110 (a) does not apply to "projects undertaken in cooperation with international or multi-national organizations or with other donor countries, whether such projects are financed through a common fund.. or each donor finances a discrete part of the project pursuant to an over-all plan or agreement."

Issue: Is it appropriate to assign to the supervisory engineer the task of evaluating and deciding on whether to work through the Patronato or the Alcaldía? Or could someone with more specialized training in social analysis make a better judgment?

The PP was revised to clarify that the Director General of Caminos rather than the field engineer will make the final decision on the appropriate local institution to take responsibility for trail construction and maintenance. The decision will be made based on the recommendations of the supervisory field engineer using the criteria listed at the top of page 7.

Issue: In practical terms, will increases in disposable incomes of \$8 to \$24 per year per farm family make a significant difference in the standard of living of the Project beneficiaries?

Pertinent sections throughout the PP were revised and the Logical Framework of the PP was footnoted to emphasize that the \$8 to \$24 figure is an absolute minimum increase; that it is, in effect, a technical aid for arriving at a methodology to determine whether a trail should or should not be constructed; that it represents only those benefits generated by transport cost savings; that health, education, agricultural and other benefits are not quantified in this figure, but that it can be expected that the latter will be more significant in terms of total benefits generated by the Project. The methodology to take these non-quantified benefits into account will be developed as part of the Project itself.

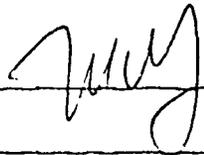
All appropriate Mission officers and the regional legal officer have received and cleared the proposed Authorization Document. The Environmental Threshold Decision with a Negative Determination was signed by Edward W. Coy for AA/LA on August 25, 1977.

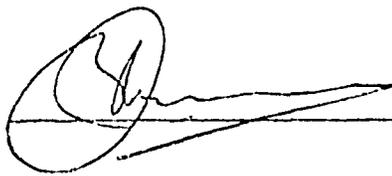
Recommendation: On the basis of the Mission review of the project including the resolution of the foregoing issues, it is requested that you approve the project for funding by signing the attached Project Authorization and the cables requesting Congressional Notification and Allotment of Funds.

Attachments:

Project Authorization Parts I and II  
Project Paper  
Cable for Congressional Notification  
Cable for Allotment of Funds

Clearances:

AD: Martin V. Dagata  Date 2/27/78  
CONT: W. Hillier  Date 2/27/78  
PROG: J. Lovaas  Date 2/27/78  
ENG: J. Callaway  Date 2/27/78

APPROVED:  Date 2/27/78

DISAPPROVED: \_\_\_\_\_ Date \_\_\_\_\_

AGENCY FOR INTERNATIONAL DEVELOPMENT <b>PROJECT AUTHORIZATION AND REQUEST                  FOR ALLOTMENT OF FUNDS PART I</b>		1. TRANSACTION CODE <input type="checkbox"/> A : ADD <input type="checkbox"/> C - CHANGE <input type="checkbox"/> D = DELETE	PAF 2. DOCUMENT CODE 5
3. COUNTRY/ENTITY HONDURAS		4. DOCUMENT REVISION NUMBER <input type="checkbox"/>	
5. PROJECT NUMBER (7 digits) [522-0137]	6. BUREAU/OFFICE A. SYMBOL LA B. CODE [05]	7. PROJECT TITLE (Maximum 40 characters) [ RURAL TRAILS ]	
8. PROJECT APPROVAL DECISION <input type="checkbox"/> A = APPROVED <input type="checkbox"/> D = DISAPPROVED <input type="checkbox"/> DE = DEAUTHORIZED		9. EST. PERIOD OF IMPLEMENTATION YRS. [2] QTRS. [ ]	

10. APPROVED BUDGET AID APPROPRIATED FUNDS (\$000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE		E. 1ST FY <u>78</u>		H. 2ND FY <u>79</u>		K. 3RD FY _____	
		C. GRANT	D. LOAN	F. GRANT	G. LOAN	I. GRANT	J. LOAN	L. GRANT	M. LOAN
(1) ST	132B	061		300		100			
(2)									
(3)									
(4)									
TOTALS				300		100			

A. APPROPRIATION	N. 4TH FY _____		Q. 5TH FY _____		LIFE OF PROJECT		11. PROJECT FUNDING AUTHORIZED		A. GRANT	B. LOAN
	O. GRANT	P. LOAN	R. GRANT	S. LOAN	T. GRANT	U. LOAN	(ENTER APPROPRIATE CODE(S)) 1 = LIFE OF PROJECT 2 = INCREMENTAL LIFE OF PROJECT			
(1) ST					400				2	
(2)										
(3)										
(4)										
TOTALS					400					FY [79]

12. INITIAL PROJECT FUNDING ALLOTMENT REQUESTED (\$000)

A. APPROPRIATION	B. ALLOTMENT REQUEST NO. <u>1</u>	
	C. GRANT	D. LOAN
(1) ST	300	
(2)		
(3)		
(4)		
TOTALS	300	

13. FUNDS RESERVED FOR ALLOTMENT  
*Allo Hed*

TYPED NAME (*Chief, SRW/FM/*) *FCO*

SIGNATURE *Barrie Baker Jr*

DATE *3-14-78*

14. SOURCE/ORIGIN OF GOODS AND SERVICES  
 000     941     LOCAL     OTHER \_\_\_\_\_

15. FOR AMENDMENTS, NATURE OF CHANGE PROPOSED

FOR PPC/PIAS USE ONLY	16. AUTHORIZING OFFICE SYMBOL	17. ACTION DATE	18. ACTION REFERENCE (Optional)	ACTION REFERENCE DATE
		MM DD YY		MM DD YY

PROJECT AUTHORIZATION AND REQUEST FOR ALLOTMENT FOR FUNDS

PART II

Name of Country: Honduras

Name of Project: RURAL TRAILS

Number of Project: 522-0137

Pursuant to Part I, Chapter I, Section 106 of the Foreign Assistance Act of 1961, as amended, I hereby authorize a Grant to Honduras, the "Cooperating Country"; of not to exceed four hundred thousand United States Dollars (\$400,000) to assist in financing certain foreign exchange and local currency costs of goods and services required for the project as described in the following paragraph.

The project, which will be implemented by the Ministry of Communications, Public Works and Transportation, consists of the testing of the feasibility of improving access to isolated rural communities in Honduras by low-cost construction of jeep trails and bridges and self-help community maintenance of such trails. Labor-intensive methods will be employed to construct approximately 165 kilometers of trails and ten small bridges. In addition, a community maintenance system will be designed, a more cost-effective methodology for the selection of candidate trails will be developed, and impact evaluation case studies will be completed. A.I.D. funds will be used to provide technical assistance and commodities, e.g. hand tools, equipment and local construction materials, as well as to finance certain other local costs associated with project implementation e.g. construction labor, supervision and per diem.

I approve the total level of A.I.D. appropriated funding planned for this project of not to exceed four hundred thousand United States Dollars (\$400,000), Grant, during the period of FY 1978 through FY 1979. I approve increments during that period of Grant funding estimated at \$300,000 in FY 1978 and \$100,000 in FY 1979, subject to the availability of funds in accordance with A.I.D. allotment procedures.

The initiation, negotiation and execution of the Project Agreement shall be carried out in accordance with this authorization and with A.I.D. regulations and Delegation of Authority subject to the following essential terms and covenants and major conditions; together with such other terms and conditions as A.I.D. may deem appropriate:

a. Except for Ocean Shipping, goods and services financed by A.I.D. under the project shall have their source and origin in the Central American Common Market or in the United States except as A.I.D. may otherwise agree in writing. Ocean Shipping financed under the Grant shall be procured in any eligible source country except the Cooperating Country.

b. Grantee shall covenant to provide not less than Dollars 122,000 in cash and in kind contributions to the project.

c. Prior to any disbursement under the Project Agreement, the Grantee shall furnish in form and substance satisfactory to A.I.D., evidence of adequate staffing to carry out the project.

d. Prior to any disbursement under the Project Agreement for any operational year of the project, the Grantee shall furnish in form and substance satisfactory to A.I.D. an implementation plan for such operational year.

  
F.B. Robinson  
Authorizing Officer  
Director  
USAID/Honduras

Drafted by: PROG:KGSchofield KGS  
Cleared by: PROG:JLlovaas JL  
ENG:JRCallaway JRC  
RLA:BVeret DR: FT/CS  
CONT:WJhillier USA  
AD:MVDagata MVJ 2/27

AGENCY FOR INTERNATIONAL DEVELOPMENT

**PROJECT PAPER FACESHEET**

1. TRANSACTION CODE  
 A ADD  
 C CHANGE  
 D DELETE

2. DOCUMENT CODE  
**PP**  
**3**

3. COUNTRY/ENTITY  
**HONDURAS**

4. DOCUMENT REVISION NUMBER

5. PROJECT NUMBER (7 digits)  
 **522-0137**

6. BUREAU OFFICE  
 A. SYMBOL **LA** B. CODE  **05**

7. PROJECT TITLE (Maximum 40 characters)  
 **Rural Trails**

8. ESTIMATED FY OF PROJECT COMPLETION  
 FY  **8**  **0**

9. ESTIMATED DATE OF OBLIGATION  
 A. INITIAL FY  **7**  **8** B. QUARTER  **2**  
 C. FINAL FY  **7**  **9** (Enter 1, 2, 3, or 4)

10. ESTIMATED COSTS (\$000 OR EQUIVALENT \$1 - )

A. FUNDING SOURCE	FIRST FY			LIFE OF PROJECT		
	B. FX	C. L/C	D. TOTAL	E. FX	F. L/C	G. TOTAL
AID APPROPRIATED TOTAL	42	258	300	47	353	400
(GRANT)	( 42 )	( 258 )	( 300 )	( 47 )	( 353 )	( 400 )
(LOAN)	( )	( )	( )	( )	( )	( )
OTHER U.S. 1. PL 480 II	36		36	36		36
2.						
HOST COUNTRY:	39	75	114	39	131	170
OTHER DONOR(S) WFP	36		36	108		108
TOTALS	153	333	486	230	484	714

Includes Community

11. PROPOSED BUDGET APPROPRIATED FUNDS (\$000)

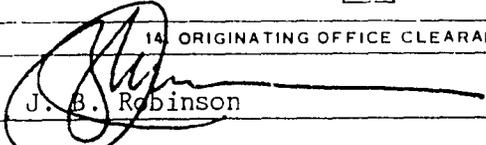
A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE		E. 1ST FY <u>78</u>		H. 2ND FY <u>79</u>		K. 3RD FY	
		C. GRANT	D. LOAN	F. GRANT	G. LOAN	I. GRANT	J. LOAN	L. GRANT	M. LOAN
(1) SD	132 B			300		100			
(2)									
(3)									
(4)									
TOTALS				300		100			

A. APPROPRIATION	N. 4TH FY		Q. 5TH FY		LIFE OF PROJECT		12. IN-DEPTH EVALUATION SCHEDULED
	O. GRANT	P. LOAN	R. GRANT	S. LOAN	T. GRANT	U. LOAN	
(1) SD					400		MM YY <input type="checkbox"/> <b>1</b> <input type="checkbox"/> <b>1</b> <input type="checkbox"/> <b>7</b> <input type="checkbox"/> <b>8</b>
(2)							
(3)							
(4)							
TOTALS						400	

13. DATA CHANGE INDICATOR. WERE CHANGES MADE IN THE PID FACESHEET DATA, BLOCKS 12, 13, 14, OR 15 OR IN PRP FACESHEET DATA, BLOCK 12? IF YES, ATTACH CHANGED PID FACESHEET.

2 1 NO  
 2 YES

14. ORIGINATING OFFICE CLEARANCE

SIGNATURE  
  
**J. B. Robinson**

TITLE  
**DIRECTOR, USAID/HONDURAS**

DATE SIGNED  
 MM DD YY

15. DATE DOCUMENT RECEIVED IN AID/W. OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION  
 MM DD YY

AGENCY FOR INTERNATIONAL DEVELOPMENT  
**PROJECT IDENTIFICATION DOCUMENT FACESHEET**  
 TO BE COMPLETED BY ORIGINATING OFFICE

1. TRANSACTION CODE  
 C A = ADD  
 C = CHANGE  
 D = DELETE

2. DOCUMENT CODE  
 PID  
 1

3. COUNTRY/ENTITY  
 HONDURAS

4. DOCUMENT REVISION NUMBER  
 1

5. PROJECT NUMBER (7 DIGITS)  
 522-0137

6. BUREAU/OFFICE  
 A. SYMBOL LA B. CODE 05

7. PROJECT TITLE (MAXIMUM 40 CHARACTERS)  
 Rural Trails

8. PROPOSED NEXT DOCUMENT  
 A.  2 = PRP  
 3 = PP

B. DATE MM YY

10. ESTIMATED COSTS  
 (\$000 OR EQUIVALENT, \$1 = )

FUNDING SOURCE  
 bA55e89

A. AID APPROPRIATED

B. OTHER  
 1.  
 U.S. 2.

C. HOST COUNTRY

D. OTHER DONOR(S)

TOTAL

9. ESTIMATED FY OF AUTHORIZATION/OBLIGATION  
 a. INITIAL FY   b. FINAL FY

11. PROPOSED BUDGET AID APPROPRIATED FUNDS (\$000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE		E. FIRST FY		LIFE OF PROJECT	
		C. GRANT	D. LOAN	F. GRANT	G. LOAN	H. GRANT	I. LOAN
(1)							
(2)							
(3)							
(4)							
		TOTAL					

12. SECONDARY TECHNICAL CODES (maximum six codes of three positions each)

13. SPECIAL CONCERNS CODES (MAXIMUM SIX CODES OF FOUR POSITIONS EACH)

14. SECONDARY PURPOSE CODE

15. PROJECT GOAL (MAXIMUM 240 CHARACTERS)  
 To improve the quality of life in selected rural communities of Honduras

16. PROJECT PURPOSE (MAXIMUM 480 CHARACTERS)  
 To test the feasibility of improving access to isolated rural communities in Honduras using low-cost, labor-intensive construction of jeep trails and bridges and self-help, community maintenance of such trails.

17. PLANNING RESOURCE REQUIREMENTS (staff/funds)

18. ORIGINATING OFFICE CLEARANCE  
 Signature \_\_\_\_\_  
 Title \_\_\_\_\_ Date Signed MM DD YY

19. DATE DOCUMENT RECEIVED AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION  
 MM DD YY

RECOMMENDATION

Authorization is recommended for a grant to the Government of Honduras for a sum of \$400,000 to test the feasibility of improving access to and from isolated rural communities in Honduras using low cost, labor-intensive construction of jeep trails and bridges and self-help community maintenance of such trails.

PROJECT PAPER

RURAL TRAILS  
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RURAL TRAILS

PART I. PROJECT BACKGROUND AND DETAILED DESCRIPTION

A. Background

The western region of Honduras, defined as the Departments of Santa Bárbara, Intibucá, Ocotepeque, Lempira, La Paz and Copán, contains 23% of the country's total population (1974 census figure), is densely populated, and is one of the poorer areas of Honduras. The USAID/Honduras Rural Education Subsector Assessment, April 1976, page 4, provides a summary description of the region in agricultural terms:

The western region of Honduras epitomizes the agricultural problems faced by the peasantry. It is the most mountainous region of the country; although it comprises 16 percent of total national area, it has only 3.1 percent of the valley land. The relative population density is extremely high, 1218 inhabitants per square kilometer of arable land, which is four times greater than the next highest region. This condition forces a great amount of land not strictly suitable for intensive cultivation into use for subsistence farms. In addition to the pressure of the population on the land, the use of mountainsides for slash-and-burn agriculture has led to erosion problems that are greater than in any other region. The valley lands where tobacco predominates as a cash crop, are taken up by large, commercial farms. The small farms are on hillside lands, with small patches of available alluvial soil.

One of the principal constraints to the agricultural development of and the provision of increased government services to mountain villages in western Honduras is the isolation of these villages from local market towns. For the majority of the rural population of western Honduras, the mountain dwellers, narrow foot trails provide the only means of communication and transportation between their small villages and the nearest market towns. This condition, while not exclusive to western Honduras, is predominant there and affects far greater numbers of people there than in the other mountainous areas of the country.

Many of the foot trails, in many places little more than narrow paths, date back to the days of the Spanish colonization (they are still called "Camino Reales") and are in very poor condition. Over the years, people and animals have trampled the vegetation, loosened the soil, removed

larger obstructions, and made the trails vulnerable to severe erosion. Trails on steep grades have become catch basins and drainage ditches for rain water because continual use and erosion have left the trails lower than the surrounding land. The accumulation of water follows the trails down the mountainsides building volume and force, carrying all loose rock and light materials until many sections are more than a meter deep, narrow at the bottom, and covered with loose or slick rocks. This severe erosion problem exists on all old trails having more than a three percent incline. Low areas have become mud holes and settling ponds for waters tumbling down the trails.

Transportation over these trails is hazardous to impossible during the rainy season. The rivers and streams that carved this rugged landscape are usually deep, swift and wide. During the months of May through November many rivers cannot be forded for hours or even days following heavy rains. The mountaineers have used available natural materials for bridging narrow streams. These include: primitive suspension bridges of bamboo and vines, logs supported by unmortared rock pilings, or series of stepping stones. These bridging devices offer a temporary, fragile solution to the problem of crossing only the narrower or shallower streams.

The mountain villagers respect the hazards of the trails during the rainy season, traveling only when absolutely necessary. This well-founded caution, unfortunately, results in family members not availing themselves of routine and preventive health services (when they exist in town) and adults not taking advantage of education and training opportunities, such as literacy classes, extension service demonstrations, instructions in basic health and hygiene in the home, and technical and vocational training. Equally cautious are the representatives of private organizations such as cooperatives and peasant organizations, and representatives of Government agencies including public health promoters and paramedics, education promoters, and agricultural extensionists who are reluctant to venture up the rainswept mountain trails, on foot or by mule.

During periods when it is possible to negotiate the trails, it is expensive to carry out agricultural and artisan products to nearby markets or to bring in supplies by headload or mule. Actual transportation costs/ton/kilometer have been found to be \$6.50 by headload and \$2.30 by mule (from a survey done in connection with Rural Reconstruction II PP, page 31, 1976). The high cost of headload and mule transportation depresses the net incomes of farmers by increasing the cost of moving their production for sale. The cost could be reduced to an estimated \$0.50/ton/kilometer with the use of pickup trucks.

The need to improve access to isolated rural communities in Honduras has been recognized. Several agencies of the Government currently have access road programs to open up areas of general agricultural production as well as of higher valued coffee and forest production. These agencies have

been inundated with requests for assistance by community representatives. Only a small fraction of the requests can be honored.

A major factor which impedes these agencies from responding positively to requests in mountainous areas is the high cost of construction. The estimated costs of a two lane access road, capable of withstanding 100 vehicles per day including large trucks, on mountainous terrain is a minimum of \$30,000 per kilometer using heavy equipment. The cost per kilometer of the currently used labor-intensive design, 4 meters wide and capable of withstanding 100 vehicles a day excluding large trucks, is \$10,000 per kilometer.

The proposed project, described in detail in the next section, will test the feasibility of using low cost (having a construction cost of less than \$4,000 per kilometer), improved trails, to improve access to isolated rural communities. If successful, it is hoped that the GOH will be able to reach at least twice as many communities located in western Honduras as previously thought possible at a given level of financing.

## B. Detailed Description

### 1. Purpose

The purpose of the project is to test, on a pilot basis, the feasibility of improving access to and from isolated rural communities in Honduras using low cost (under \$4,000 per kilometer), labor-intensive construction of jeep trails and bridges and self-help community maintenance of such trails. The project will provide valuable data on the desirability for including jeep trail designs in the Government's road building programs and on the desirability of including a labor-intensive road building component in future A.I.D.-financed programs such as the proposed Agriculture Sector II program.

### 2. Executing Agency

The Department of Labor Intensive Roads (Caminos por Mano de Obra) of the Directorate of Highways, Ministry of Communications, Public Work and Transportation, will be the executing agency of the project. This Department anticipates a \$500,000 budget for CY 1978 to administer, design and implement an annual access road program. The Department, which has been functioning as a unit for 1 1/2 years, is receiving technical assistance in labor-intensive road design and construction from the World Bank and participates in a German Government assisted food-for-work program.

### 3. Outputs and Inputs

#### a. Summary

##### Outputs

- Approximately 165 kilometers (km) of foot and mule paths upgraded to nearly all-weather jeep trails.
- System of community maintenance established.
- Trail selection procedure developed.
- Case studies to determine impact completed.

##### Inputs

Equipment and services

- Technical assistance for evaluation, selection procedure
- Commodities - Hand Tools
- Food-for-Work

- Materials - Concrete, re-bars, sand, gravel and rock
- Labor
- Office space, supplies and other administrative costs

Costs by Contributor

A.I.D. - Total of \$400,000 in grant financing plus \$36,000 in PL 480 Title II commodities provided through CARE.

World Food Program - Estimated \$108,000 in donated food commodities.

GOH Counterpart - Estimated \$122,000.

Communities - Estimated \$48,000.

Estimated Total Cost - \$714,000.

b. Trail and Bridge Construction

The project will upgrade, over a period of two years, approximately 165 kilometers of foot and mule paths to nearly all-weather, jeep trails using labor-intensive construction techniques. A typical trail would start at an all-weather road and extend along the most favorable route to the farthest point in the mountains where economic benefits can be derived from the construction of the trail. Trails are expected to be from 5 to 25 kilometers in length.

Where justifiable, short branch trails will be run to villages along the route. The main trail and connecting trails will have the same specifications: they will follow the general slope of the land to the maximum extent possible, have loose rock retaining walls, permanent drainage systems to prevent erosion, non-plastic surfacing, the minimum gradient compatible with site conditions, curves with a radius sufficient to be negotiated by pickup trucks, a width of 2.5 meters (wide enough for a 1 1/2 ton pickup truck and to permit two loaded pack animals to pass with safety) and passing zones four meters wide. Approximately ten bridges, of varying designs and capacities, will be constructed over streams and small rivers.

Preliminary engineering designs and construction techniques have been selected for the project's initiation (they are discussed in detail in the Technical Analysis). However, during implementation, experimentation will be carried out to determine the most cost effective combination of engineering designs and construction techniques. Detailed cost records

will be kept for each trail and will be summarized in a trail completion report, along with recommended refinements. The trail completion reports will provide the cost and technical information necessary for the evaluation of the construction component.

Approximately 90% (\$646,000) of the estimated total funding for the project will be used for the construction component. A.I.D. will provide \$360,000 in grant funds and \$36,000 in food-for-work (through CARE) to finance local construction labor and supervision, hand tools and other equipment, and construction materials.

The GOH will provide \$122,000 to finance a full-time supervisor engineer for the project; the services for five years of an inspector/promoter of the community maintenance system; three vehicles with associated operating and maintenance costs to transport people, materials and food; the backup engineering services of draftsmen, topographers, etc.; and, general administrative costs, such as office space, supplies and social security payments.

The World Food Program will provide food-for-work valued at \$108,000 to help finance local construction labor and supervision.

Local communities will make several types of contributions to the construction component. They will assure that the necessary sand, gravel and rocks are available at no cost for culvert and bridge construction and balasting. They will provide office space for the field supervisory engineer and local warehouse space for food-for-work. Local communities will divide food-for-work commodities into weekly or bimonthly rations to simplify distribution. (CARE and the WFP will retain responsibility for monitoring food distribution.) The estimated monetary value of these contributions is small (approximately \$25,000) but the contributions are important for the successful implementation of the project.

#### c. Community Maintenance System

A system of trail maintenance will be developed to marshal the human and financial resources of the communities directly benefited by the construction of the jeep trails to ensure continuing maintenance of the trails. It is estimated that maintenance requirements will be two man-days of labor/km/month for trail repair and \$4/km/year for tool replacement.

Two common types of local level institutions--voluntary community betterment committees, Patronatos, and municipal governments, Alcaldías--will cooperate in the trail selection, design and construction phases and in carrying out the responsibilities of trail maintenance, including the regular organization of maintenance work. The latter will include the recruitment of voluntary labor, fund-raising to replace broken tools

and the safekeeping of maintenance tools. While the conclusion of the Social Analysis is that the Patronato will be, in general, the more feasible alternative, the final determination to work through the Patronato or the Alcaldía, or a combination of the two institutions will be made by the Director General of Caminos. The determination will be guided by the recommendations of the field engineer on the basis of his/her field observations of such factors as the relative enthusiasm for taking on maintenance responsibilities, known past experience of each group, the organizational and leadership skills exhibited by the president(s) of the Patronato(s) versus the skills and capacities exhibited by the municipality during the stages of trail selection, design and construction, and the relative abilities of the institutions to raise funds and recruit voluntary labor .

Also to be developed during the project is the procedure by which the local institution will formally take the responsibility of maintenance for the trail. The procedure must instill a sense of community ownership for the newly constructed trail so that the community will look to itself and not expect the GOH to provide maintenance. A similar program in Mexico uses a formal dedication ceremony to do this. The advantages of using a ceremony as well as a written agreement will be examined during the first year of project implementation. A written agreement will be standard procedure.

Several activities of the project will contribute to the development of a community maintenance system. As mentioned above, the supervisory engineer, financed by the GOH, will determine, while working in the field with the communities, the appropriate local institution to recommend to the Director General of Caminos for taking the responsibility for trail maintenance.

The community will be given the necessary technical know-how to maintain trails through on-the-job training. This will take place during the construction phase when the labor recruited from benefitting communities, including the foremen and general supervisor, will be trained in trail construction and maintenance.

In addition, the GOH will hire a field maintenance inspector/promoter, trained in labor intensive construction and maintenance techniques. The inspector will visit the trails on a regular basis after the completion of construction to provide technical assistance in maintenance to the communities and feedback to the Department about the actual progress of the maintenance program.

The only incremental costs of the Community Maintenance System component of the project are salary, per diem and transportation for the maintenance inspector/promoter and tool replacement and voluntary labor for actual trail maintenance. The cost of the inspector/promoter, financed by the GOH, is estimated at \$3125 over five years (the inspector will

be a full-time employee of the Department, but will only spend an estimated 25% of his time on trails constructed under this project). The community's contribution to the actual maintenance of the 165 kilometers of trails is estimated to be \$4,620 per year for five years.

d. Trail Selection Procedure

Since this project is a pilot program being used to provide experience for and to develop methodologies for possible future national programs, and since therefore it is not a jeep trail-building program per se, the project will select trails for construction on the basis of providing a broad experience in a relatively short time span rather than on the basis of a national system of integrated investment planning with other sectors or the relative rank order of a large number of candidate trails. However, institutions providing a wide range of social and economic services will be consulted by the Department with regard to their plans for service facilities or other service outreach programs during the selection process. Trails will be selected in differing terrain, and in different crop production regions, e.g. coffee, vegetables and basic grains. Results will be compared in terms of cost and impact. All trails to be constructed, however, will meet a set of minimum feasibility and desirability requirements as discussed in the Economic Analysis. Once a trail has been completed, the Department will consult periodically with various service institutions and, in effect, promote the establishment of additional services in the areas of the new access trails.

At the same time as construction is underway, the selection procedure currently being used by the Department of Labor Intensive Roads for its access road construction program will be modified. The Department is currently employing an experimental procedure (see annex 2c for a description) developed by a consulting firm under contract to the World Bank, to select and rank candidate access roads. The procedure is initiated when the Department receives a request for road construction.

While the institution of the selection procedure has provided a rational means for allocating the scarce resources of the Department, it has one basic shortcoming. The procedure only ranks the candidates relative to one another. As a result, there is no assurance that any of the candidates would necessarily have a Benefit/Cost ratio at least equal to one.

The project's course of action will be to experiment with different procedures to develop one which will provide a sufficient basis to select, determine a benefit/cost ratio for candidate trails, and rank them within the boundaries of the need to use a procedure meeting the criteria of low cost and easy to implement. This means the procedure developed must be a relatively simple one, not requiring overly sophisticated analyses. The current selection approach will be utilized to the extent possible, so as to take advantage of the experience the

Department has had implementing the procedure. Technical assistance will be provided (approximately \$20,000 by A.I.D.) to modify the current approach to include the calculation of a benefit/cost ratio and to test the relative cost effectiveness of several possible approaches including:

1. the current approach
2. the current approach plus benefit/cost ratio
3. a simplified methodology for the calculation of a benefit/cost ratio.

It is expected that the basic approach of the Department, responding to requests for road or trail construction, will remain unchanged during the project, with the exception of the addition of the consultation with public and private institutions prior to finalizing selection. By the end of the project, a change in the nature of the requests received is expected. At present, requests are received primarily from local communities and the possibilities of complementary investments by other agencies are taken into account in only a cursory fashion. In the event that the Department's labor-intensive trail construction program is supported under the proposed Agriculture Sector II program, requests will be made by other agencies (e.g. Agriculture, Health, Education) of the GOH to support integrated investment plans for specific regions of the country. In this case, the selection procedure will be used to reject requests for road or trail construction which prove to be too costly for the projected level of benefits.

e. Impact Evaluations

Two to three case studies will be carried out to determine the short run impact of trails constructed during the project. Such aspects as changes in transportation methods and costs and the use and availability of public services will be covered. The incidence of benefits derived from, and the social effects of, the trail construction will also be determined. The longer run impact of the trails, such as changes in agricultural productivity, unfortunately, cannot be evaluated comprehensively during a two-year project. The more comprehensive, longer term impact evaluation would be a logical component of expanded follow-on programs. A.I.D. will provide approximately \$20,000 over a two-year period to finance these impact evaluations.

4. Project Success

The project will have achieved success if the following conditions obtain by the end of the project:

1. trails are passable year round by four-wheel drive vehicles;
2. trails are maintained by the community;
3. transportation costs over the trails are reduced by an average of \$1.80 per ton per kilometer;
4. the designs of the trails and bridges are refined and adopted by the GOH for use in its labor-intensive road construction program; and
5. personnel in the GOH and communities become accomplished in appropriate aspects of trail design, construction and maintenance.

The successful completion of the project should improve the quality of life in the rural communities served by the trails. Based on data gathered for six trails, the disposable income of the average farmer family will be increased in the very short run by an absolute minimum of between \$8 and \$24 per year due to decreases in transportation costs of marketed production alone. Disposable incomes will also rise due to reduced prices for goods brought into the community. Of course, the above assumes that savings in transport costs accrue almost entirely to the farmer rather than to intermediaries such as small vehicle owners. (See the Social Analysis for a discussion of this assumption).

Farm incomes should also rise due to induced, additional agricultural production. While increases in agricultural production will not automatically occur because of trail construction, improved access is a necessary condition for the growth of agricultural production and allows farmers to increase the area under cultivation for production to be marketed and to shift their crop mix towards higher valued, familiar cash crops. These types of changes often do not require large complementary investments, costly new inputs, or technical assistance. Income changes based on increases in yields, of course, depend more heavily on improving the farmers' access to sources of information, credit and inputs. Therefore, the achievement of changes in income due to increases in yields will probably require complementary investments in extension services and, in some cases, in irrigation.

The construction of a jeep trail should increase the utilization of public and private services now in existence and increase the number of services offered by public and private institutions. Small communities will be able to take greater advantage of the health and educational services of larger communities located on the trail or made more accessible because of the trail. Extension agents and promoters of public and private institutions will be able to visit previously isolated communities using jeeps or other small four-wheel drive vehicles and will be able to expand their relationships, assistance efforts and projects. As the transport savings are enough to satisfy the minimum

economic feasibility for the project, the social and other economic benefits were not quantified in this paper. However, the social and agricultural services benefits should be rather significant considering that in Honduras such services have traditionally followed closely behind road construction rather than the reverse.

The Ministry will seek to integrate trail construction with other GOH development plans so as to maximize the socio-economic benefits generated by the project. The Ministry will consult with public and private agencies active in the Western Region, such as the Coordinating Body for the Integrated Development Project of the West, the Honduran Coffee Institute, the Ministry of Health, the Ministry of Education, and others, and solicit their plans and programs for follow-on services for the trail sites already selected. The Ministry will present by November 1978, at the time of the Phase I evaluation, the procedure it will pursue for incorporating other agency inputs into the selection methodology for the remaining trail sites.

Agencies will be requested to review candidate trails and to indicate which sites are most likely to receive increased assistance efforts upon completion of construction. They will also be asked to propose candidate trails. Determinations of the final route of a trail will be made taking into account existing and planned locations of facilities such as schools and health clinics as well as the availability or potential availability of agriculture-related services. A written record of all coordination discussions will be kept by the Ministry and they will retain throughout the administrative direction and control of the selection process.

## PART II. PROJECT ANALYSES

### A. Technical Analysis

#### 1. Technical Description

Each primary trail will begin at an all-weather road and follow the least expensive and most practical course to the mountain villages. Areas susceptible to landslides will be avoided. Ridge routes will be followed where possible to take advantage of natural drainage and solid base. Trails will employ loose rock embankments, hand compaction, and light gravel surfacing where required, and will have a width of 2.5 meters. Curvature and gradient will be held to a minimum with consideration for site conditions. The width of the trails was determined by the space required for a single four-wheel drive, jeep type vehicle or pickup truck and for two loaded pack animals to pass with safety. Passing zones approximately 4 meters wide will be left at line-of-sight intervals so that two vehicles traveling in opposite directions will be able to pass one another safely. (See Annex 2.a. for a typical Cross-Section).

Various bridging devices or structures will be examined to allow year round passage through or over streams and small rivers. Designs will include the improvement of natural fords, submersible bridges (concrete and rock pads laid on stream beds), simple wooden deck bridges supported by mortared rock headwalls, cable-supported bridges, concrete culverts, ferries and possibly even a century-old local design for rock arch bridges. (See Annex 2.a. for preliminary designs).

All easements are to be obtained at the time of or soon after the preliminary engineering survey. No funds have been budgeted for the purchase of rights-of-way. It is anticipated, based upon the experience of the Department, that the required 3 to 5 meters for rights-of-way will be donated by property owners. In the unlikely event that a case arises where the easement cannot be obtained, the trail will be rerouted. Stone fences contiguous to cultivated fields which are damaged or destroyed during trail construction will be replaced with barbed wire fencing. Stone walls were considered as an alternative but are believed to be nearly twice as expensive.

Construction will be carried out under the overall supervision of the Department of Labor Intensive Roads. The Department has named a full-time supervisory engineer to be responsible for all trail and bridge construction, including structural design, route survey, overall supervision, maintenance of inventory and progress records, preparation and certification of the payroll, and dispatch of foods. The supervisory engineer will work out of a field office in the region of the actual construction sites.

The supervisory engineer will be assisted by a general supervisor at each trail site. (The construction of two to three trails may be underway at the same time). The unskilled construction laborers building the trail will work in groups under the charge of foremen who will be responsible to the general supervisor for the trail. Skilled laborers will be used as necessary for the construction of permanent structures such as bridges and culverts. All foremen and general supervisors will be recruited locally and trained on-the-job. General supervisors may also receive training at another construction site before assuming their responsibilities.

Initially, the construction crew will use hand tools, such as wheelbarrows, shovels, pickaxes, crowbars, and sledge hammers, almost exclusively. When necessary, the Department will provide dynamite to remove large rocks. Standard Ministry security and safety measures will be employed in the storage, handling and use of the dynamite. Ballast material, if not available on the trail, will be hauled in to the closest possible point using a small dump truck. Hand earth tampers will be provided for compaction.

The technological mix will be varied during implementation to determine the most efficient construction techniques. The objective will be to find the combination of hand tools and equipment which will yield the most satisfactory results at the lowest possible cost, with a large labor component and maintainable by the same manual labor which builds the trail. The range of efficient technological mixes actually has been narrowed down by experimentation done by the Department during the last year and a half with technical assistance from the World Bank.

Further experimentation under this project will probably concentrate on the use of small compaction machines and pneumatic or hydraulic rock drills. One other alternative to be tried to reduce the time required for construction and cost of a given trail segment will be to blaze the trail roughly with a small bulldozer and complete it by hand labor. The bulldozer will be supplied by the Ministry from other Ministry projects. Other equipment will be purchased out of Project funds for such experimentation.

Hand tools for maintenance will be issued to the President of the Patronato or leader of each beneficiary community (list of tools comprising Maintenance Tool Package is provided in cost section). Each community will be responsible for maintenance of specific segments of trails. Maintenance will include repair of potholes and washouts, clearing of landslides, cleaning of culverts and drainage systems, removal of debris from bridge sites, and clearance of right-of-way.

## 2. Design

### a. Objectives

The preliminary designs of the jeep trails and associated drainage structures and bridges were made to fit the environment of the mountainous western region of Honduras. The twin objectives were to achieve as low a construction cost as possible and to keep maintenance requirements at a level which local communities can manage, within the following parameters:

1. Design life of the trails will be 10 years and they will be designed to accommodate a volume of 10 vehicles per day at maximum axle loads of 5,000 lbs. -- gross vehicle weight 7,800 lbs. Gradient and curvature will be held to the minimum compatible with site conditions.
2. Cable supported bridges will have 4 1/2 ton capacity, other types 15 tons.

The most significant design feature which leads to the expectation that cost and maintenance objectives can be met is the limited width (2.5 meters) of the trails. In mountainous terrain, where quantities of material to be excavated may increase geometrically with width, narrowness keeps down excavation costs. The cost of bridges also goes down as width is reduced.

Narrowness also minimizes the amount of maintenance required. The most likely cause of deterioration of a trail (given the low volume of traffic) is rain. In fact, water was the primary cause of the deterioration of the original foot trails. The narrow width keeps the accumulated volume of rainwater down to a minimum by not providing a large surface area for runoff. The provision for drainage (lacking in the original trails) assures that rainwater is dispersed away from the trail before the volume of water gains erosive power. Observation of roads in Honduras where washouts occur and, more importantly, where washouts do not occur, confirms the importance of width as a determinant. Naturally, a narrow trail also reduces maintenance requirements by minimizing the surface area to be maintained.

Another important feature of the project which will help minimize construction costs is that the lowest cost, serviceable bridging device will be used. The type of structure will be determined by required length of bridge; type of soil; stream bottom conditions; depth of the stream during periods of heavy rainfall; time of harvest; local availability of construction material, e.g. rock, sand and gravel; and expected increases in traffic over the next ten years.

b. Expansion

To facilitate the expansion of the trail, if usage warrants upgrading to accommodate medium-sized trucks and other traffic, permanent structures such as culverts and bridges (except for cable-supported bridges) will be built three meters in width and have a capacity of 15 tons. Where it is necessary to erect cable-supported bridges, the capacity will be limited to 4 1/2 tons. This type of bridge will be used only when it cannot be avoided, e.g., over deep and fast moving rivers.

c. Appropriateness

Engineering parameters will be adequate for isolated communities in the mountainous areas of Honduras where normal vehicular traffic is expected to be about two vehicles per day (one small bus in and out). During harvests, the volume of traffic is not expected to exceed 10 vehicles per day for any period of time over a few days (four pickup trucks and one bus in and out).

The design is not appropriate for large, rich valleys where the growth of agricultural production and traffic would overtax within a few years the relatively simple and low-cost trail and bridge designs of the project. Where candidate trails warrant a road and more sophisticated bridges, they will be referred to another department within the Directorate of Highways.

3. Suitability of the Technology

a. Feasibility

Experience gained during the last year and a half under the Department's access road program and under the Special Development Activities project of USAID/Honduras shows that hand tools are adequate in the areas contemplated for construction. When necessary, the Department will provide dynamite to remove large rocks; however, most such obstacles can be bypassed.

Experience also indicates that local labor can be readily trained to carry out the simple construction tasks using hand tools and that local supervisors also can be easily trained and are effective. The daily productivity of a worker in terms of volume has averaged two cubic meters per eight-hour day for both the SDA trails and GOH access road projects.

b. Labor Intensiveness

Excluding non-construction related costs of the projects, i.e., costs associated with equipment experimentation, maintenance, evaluation and the development of a new selection methodology, local labor costs are estimated at 53% of total project expenditures. Tools account for 3% of expenditures; materials account for 27% of expenditures; administration/supervision accounts for 7% of expenditures; and, vehicles account for 10% of expenditures. The share of local labor costs in total expenditures is relatively low for labor-intensive projects because of the bridge construction element where labor costs are about 30% as opposed to the material costs of about 70%; and the anticipated high proportion (approximately 10%) of bridge construction costs as a portion of total construction costs.

c. Appropriateness

Because of the emphasis of the project on developing a community-based maintenance system for each trail, a labor-intensive construction technology using mostly hand tools is considered to be appropriate and necessary. By using a labor-intensive technology during construction, the locally recruited construction labor and supervisors can be trained on-the-job in construction and maintenance techniques and in the use of hand tools. By the end of the construction phase, a large number of the community residents will have actual trail construction experience.

Even if during experimentation a bulldozer is added to the technological mix to blaze a rough trail, people from the community will still be trained in trail construction and maintenance. As discussed earlier, the use of a bulldozer would be restricted to the pioneering part of the excavation phase. Labor-intensive techniques would then be used to complete excavation and all other tasks.

4. Cost

a. General

Cost estimates for this section have been made based upon the experience of the Department's access road program, and USAID/Honduras' Special Development Activities project, as well as on an engineering survey of three candidate trails. The cost estimates were made using the initial technological mix, almost exclusively hand tools, discussed above in the Technical Description. Actual costs will vary among cost categories as the technological mix is changed. Costs will also vary depending upon the types of bridges that can be built. However the overall cost per kilometer should not exceed \$4,000 except in rare cases.

i. Trail Construction

It is estimated that trail construction, i.e. general excavation, grading of extreme slopes, culvert installation, spring water control, soil stabilization, drainage ditch installation, fencing, ballasting and ford construction will require 845 man-days of unskilled and skilled labor (including foremen and general supervisors) per kilometer. The total labor cost per kilometer will be approximately \$950 in cash wages and \$845 in food-for-work. Unskilled laborers will earn \$1.00 per day; skilled laborers, foremen and general supervisors will earn slightly more. The cost of food-for-work has been estimated at \$1.00 per man-day.

Materials purchased during general construction, i.e. cement, culvert pipe, barbed wire, staples, posts, reinforcing bars, wire, sand, gravel and rock are estimated to have an average cost of \$693 per kilometer.

ii. Bridge Construction

The estimated construction costs per linear meter of the various bridging devices to be considered for use in the project are as follows:

<u>Type of Bridge</u>	(US\$) <u>Cost/Linear Meter <sup>1/</sup></u>	<u>Food-for Work</u>	<u>Width</u>	<u>Maximum Rear Axle Load</u>
Improvement of Natural Ford	\$ 25	\$ 10	6 m	18,000 lbs.
Concrete & Rock Submersible	135	15	4 m	18,000 lbs.
Cable Supported- Wooden Deck	198	18	3 m	4,500 lbs.
Rock Piers-Wooden Deck	232	42	3 m	18,000 lbs.
Multiple Culvert	670	620	3 m	18,000 lbs.
Rock Arch	750	720	3 m	18,000 lbs.
Concrete Reinforced	1,600	800	3 m	18,000 lbs.
Cable Ferry	5,670 <sup>2/</sup>	N/A		(6 ton capacity)

1/ Cash wages plus materials

2/ Total, not per meter.

iii. Other Direct and Indirect Costs

Per kilometer costs cost associated with the resident supervisory engineer, construction tools, trail selection, transportation, other engineering

costs (drafting, topography, laboratory) and general administration total approximately \$608.

iv. Total Construction Cost Per Kilometer

The total per kilometer cost (direct and indirect) of trail and bridge construction is equal to the cost of trail construction including \$1506 in cash wages and purchased materials, \$137 in donated materials, and \$845 in food-for-work plus other direct and indirect costs which equal \$608, plus the cost of bridge construction. In short, the total cash and in kind costs are estimated at \$3096 per kilometer excluding bridge construction. Of course, the per kilometer cost of a trail when bridge construction is added will depend upon the number, type and length of bridging devices found to be necessary for each specific section of trail.

b. Costs of an Illustrative Trail Section - Ciliantuque to Monte de la Virgen

A detailed breakdown of trail and bridge construction costs is provided in Table I for a 22 kilometer section of a trail candidate (Ciliantuque to Monte de la Virgen) located in the western Department of Lempira. This particular trail was chosen out of three trails surveyed during project development because it includes a wide range of the possible costs which might be encountered for trail and bridge construction in one trail. The trail includes eight kilometers of relatively level, unobstructed terrain, 14 kilometers of mountainous terrain, two large streams and one river. The construction of one suspension bridge, 45 meters long by 3 meters wide, and two smaller bridges, 6 meters long by 3 meters wide was included.

The average cost per kilometer of trail and bridge construction is estimated at \$3,637 for this 22 kilometer trail -- \$2,488 for trail construction (including food-for-work), \$541 for bridge construction and \$608 for other direct and indirect costs.

c. Tools

Two hand tools packages have been developed --one for construction and one for maintenance (See Table II for a complete tool list). Enough tools will be purchased to work simultaneously on 40 kilometers of trails, eight sections of 5 kilometers each, to replace broken tools (at a rate of 10% per year based on the best available estimate of a seasoned Honduras road building expert), and to provide a maintenance tool package for each 5 kilometers of jeep trails constructed. The maintenance tool packages for each trail will be drawn from the tools used to construct each trail.

ILLUSTRATIVE TRAIL SECTION

Table 1

22 Km. Ciliantucue to Monte La Virgen (U. S. Dollars)

A. L. D.

Materials	L man days	A		B		O		R		A.I.D. Total	Community *	Food for-work	GOB	Total Input Cost/Km.
		Skilled man days (md)	\$	Gen. Superv. man days (md)	\$	Group leaders (md)	\$							
<b>Trail Construction</b>														
Culvert Installation		610	(156)	218	(36)	240	(88)	176		1244		884		
Cement	460													
Culvert Pipe	1610									2070				
Sand											528			
Spring Water Control		630	(80)	112	(6)	48	(40)	80		870		756		
Rock, sand and gravel											240			
Cement	431									431				
General Excavation 25 men working 16 days on 1 km.		8580			(48)	384	(624)	1248		10212		9252		
Soil Stabilization, Rock		420			(6)	48	---	---		468	180	426		
Drainage Ditch, 15.670 meters		1805	---	---	(15)	120	(156)	312		2237		1976		
Fencing		1996	---	---	(10)	80	(156)	312		2388		2162		
Barb wire (\$17.50/roll)	6651													
Staples (\$.50/lb)	350													
Post (\$.30 each)	2250									9231				
Grading Extreme Slope		144	(10)	14	(4)	32	---	---		150		158		
Balast		2424	---	---	(6)	48	(156)	312		2784	1980	2586		
Low Water Ford (2)		260	(70)	98	(8)	64	(52)	104		526		390		
Rebars & wire	44													
Cement	450									494				
Sand, Gravel & Rock											81			
SUB-TOTALS	12226	16869	(316)	442	(133)	1064	(1272)	2544		33145	3009	18590		
SUB-TOTALS (Cost/km)										1506	137	845		2488
*Community contribution of sand, gravel and rock valued at \$1.50 per ton.														

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## ILLUSTRATIVE TRAIL SECTION

Table 1 (page 2)

	Materials	A. I. D.								A. I. D. Total	Community	Food For-Work	GOH	Total Input Cost/Km
		L man days	A Skilled man days (md)	B S	O Gen. Super. man days (md)	R S	Group leaders (md)	S						
<b>Bridge Construction</b>														
6 M X 3 M Bridge		168	(52)	73	(16)	96	(21)	42	379		257			
Cement	180													
Rebars	56													
Nails and wire	20													
Bolts	34													
Lumber	404													
Misc. material	66								760					
Gravel sand and rock										54				
6 M X 3 M Bridge (#2)	760	168	(52)	73	(16)	96	(21)	42	1139	54	257			
Cable Supported Bridge (45m)		650	(85)	119	(33)	264	(40)	80	1113		808			
Cement 200 bags	1200													
60 rebars at 5.00 Ea.	300													
5776' B.F. Lumber at .30/ft.	1740													
Bolts and Nails	300													
Cable clamps	445													
1220' 3/4" steel cable	1220													
700' 1/2" steel cable	700													
4 turn buckles 1 1/8"	400													
Misc Material	700								7005					
Sand gravel and stone										68				
SUB-TOTALS	8525	986	(189)	265	(65)	456	(82)	164	10396	176	1322			
SUB-TOTALS (Cost/km)									473	8	60			541
<b>Other per Km. costs based on total Project Averages</b>														
<b>Engineering</b>														
Supervisor & Designer (6m at \$425/m(1/2 time)								116	116					116
Backup (draftman, lab. right of way, topography)											69			69
<b>Tool Cost</b> (\$87.50/km)									88					88
<b>Social Security</b>												34		34
<b>General Administration</b> (Office space, supplies, Transport, etc.)												251		251
<b>Trail Selection</b>									25			25		50
SUB-TOTALS (Costs/km)								116	229			379		608
<b>TOTAL (Costs/km)</b>									2208	145	905	379		3637

HAND TOOL PACKAGES

<u>First Year Hand Tool Package</u>	<u>Estimated Cost</u>	<u>Maintenance Package for Each 5 kms.</u>	<u>Estimated Cost</u>
120 R.P.L.H. Shovels	\$840	1 Wheelbarrow	\$ 70
60 Picks w/handles	480	3 R.P.L.H. Shovels	21
20 Mattocks w/handles	320	2 Picks	16
8 9# Sledge Hammers	280	1 5' Pry Bar	10
24 5' Pry Bars	240	4 Files	4
80 Machetes	160	1 Axe	10
160 Files	160	1 Square Earth Tamper	15
4 Cross Cut Saws	120	Miscellaneous	<u>14</u>
8 Axes w/handles	80		160
8 Bar Claw & Pinch	60		
4 4# Sledge Hammers	40		
8 Hatchets	60		
20 Claw Hammers	100		
4 Hacksaws	20		
4 Carpenter Saws	60		
8 Post Hole Diggers	80		
8 Square Earth Tampers	120		
4 12" Crescent Wrenches	30		
40 Wheelbarrows	2,800		
Miscellaneous	<u>550</u>		
	6,600		

5. Environmental Impact

An Initial Environmental Examination (IEE) was prepared by USAID/Honduras and a negative determination was approved by AID/W. (Annex 3 provides a copy of the IEE).

6. Summary Conclusion

It has been determined that the design, cost, technology and general description of the project discussed in the above sections provide an adequate basis to embark upon an experimental project of this type. It is understood that the technical analysis is preliminary and that its specifics are expected to be modified on the basis of experience gained under the project.

B. Financial Plan

The total cost of the project is estimated to be \$714,000, as detailed in Tables III and IV. A.I.D.'s contribution is expected to be \$436,000 (\$400,000 in grant financing and PL 480 Title II commodities with an estimated value of \$36,000). An estimated expenditure plan of A.I.D. authorized funds, by year, is given in Table V.

SUMMARY COST ESTIMATE AND FINANCIAL PLAN

(U.S. \$000)

	AID		GOH		Food for		Total
	FX	LC	FX	LC	Community LC	Work FX	
<u>General Administration &amp; TA</u>							
Office Space, Supplies, Social Security				15	2		17
Engineering (Resident Supervisor)				21			21
TA: Evaluation, Selection		40		8			48
Transport			39	19			58
<u>Hand Tools/and Other Small Equipment</u>	37	1					38
<u>Various Bridges (Approximately 10)</u>							
Materials		27			2		29
Labor		6				5	11
<u>General Construction (165 kms.)</u>							
Materials		92		17	21		130
Labor		157				139	296
<u>Maintenance (5 year period)</u>				3	23		26
<u>Contingencies</u>	10	30					40
TOTAL	47	353	39	83	48	144	714

COSTING OF PROJECT OUTPUTS/INPUTS  
(U.S.\$000)

Inputs by Source	Project Outputs				Total
	165 Kms. of trails	Est. 10 Bridges	Impact Study & Sel. Me- thodology	Modifi- cations of Designs	
<u>AID</u>					
1. Labor	157	6			163
2. Construction Materials	92	27			119
3. Technical Services (Evaluation, Selection)			40		40
4. Tools/Other Small Equipment	37	1			38
5. Food-for-Work (CARE)	35	1			36
6. Contingency/Inflation					40
Sub-Total					436
<u>GOH</u>					
7. Technical Services	18	12		1	32
8. Transport	51	7			58
9. General Administration (Office space, supplies, social security)	14	1			15
10. Dynamite	17				17
Sub-Total					120
<u>Community</u>					
11. Maintenance	23				23
12. Construction Materials	21	2			23
13. Administration Costs	2				2
Sub-Total					71
<u>World Food Program</u>					
14. Food-for-Work	104	4			108
TOTAL	571	61	40	1	714

PLANNED ACCRUED EXPENDITURES BY QUARTER OF A.I.D.

	<u>GRANT FUNDS</u>				<u>TOTAL</u>
	CY 78				
	<u>2nd Quarter FY 78</u>	<u>3rd Quarter FY 78</u>	<u>4th Quarter FY 78</u>	<u>1st Quarter FY 79</u>	
60 Kms. of trails and bridges					
a. Materials, Labor, Supervision		37	36	25	103
b. Hand Tools/Equipment	16	10		11	37
Technical Assistance		10	10	10	30
Contingencies					40
	<u>21</u>	<u>57</u>	<u>46</u>	<u>46</u>	<u>210</u>
	CY 79				
	<u>2nd Quarter FY 79</u>	<u>3rd Quarter FY 79</u>	<u>4th Quarter FY 79</u>	<u>1st Quarter FY 79</u>	<u>TOTAL</u>
105 Kms. of trails and bridges					
Materials, Labor, Supervision	62	62	46	10	180
Technical Assistance	<u>10</u>	<u>        </u>	<u>        </u>	<u>        </u>	<u>10</u>
	72	62	46	10	190

C. Economic Analysis

1. Introduction

This section is structured in the following manner: first, the types of economic benefits expected to be derived from trail construction will be discussed; second, the magnitude of the expected economic benefits will be estimated; third, the general feasibility of the project will be discussed; fourth, the minimum eligibility criteria for the construction of trail under this pilot project will be presented; and fifth, the employment and income effects of the project will be examined.

2. Types of Economic Benefits<sup>1/</sup>

The types of economic benefits to be derived from jeep-trail construction are a mixture of the benefits commonly identified under traditional and penetration analyses of rural roads: transportation savings and increased agricultural production.

Other benefits, such as increased incomes of traders and artisans resulting from higher volumes of business, are mentioned only in passing. They are not expected to be large.

a. Transportation Savings

Transportation cost savings are expected to be large because of the anticipated change from high-cost, mule transport to relatively low-cost, pickup truck transport between villages and the nearest (before jeep-trail construction) all-weather road. Average transportation costs by different modes of transportation in Honduras are given in Table VI.

TABLE VI

Transport Costs/Ton/Km by Transport Mode<sup>\*/</sup>

<u>Transportation Mode</u>	<u>Cost/Ton/Km</u>
Headload	\$ 6.50
Mule	2.30
Oxcart	.90
Pick-up (short haul)	.50
Truck (long haul on main road)	.10

<sup>\*/</sup> From survey done in conjunction with Reconstruction II Project Paper, p. 81.

<sup>1/</sup> This section borrows heavily on "The Economic Analysis of Rural Road Projects", World Bank Staff Working Paper No. 241, August, 1976.

The average transportation savings in Honduras resulting from a shift from mule to pickup truck transport (short haul) is therefore \$1.80 per ton per kilometer ( $\$2.30 - \$0.50 = \$1.80$ ).

A shift from headload to pickup truck transport has been excluded from consideration since the cost given in the table for headloading is probably not a true opportunity cost. A shift from mule to oxcart has also been excluded because of infeasibility of using ox carts on the relatively steep inclines (over 3%) to be encountered on the jeep trails.

Transport savings will lower both the cost of marketing agricultural production, and the cost of bringing in agricultural and other inputs. Farm income will rise because of higher farm gate prices for agricultural production and lower production costs.

b. Increased Value of Agricultural Production

i. Current Transportation Constraint

The current isolation of villages located on mule paths has restricted the potential incomes of farmers in several ways. First, the high cost of mule transportation (affecting the cost of inputs as well as marketing) has made it difficult for these farmers to be cost competitive in the market. Only the most profitable cash crops, e.g. coffee, will yield a profit after subtracting transportation costs. Secondly, isolation, especially the lack of bridges, makes it very risky to grow large quantities of food for market. The farmer cannot count on being physically able to transport his production to market at harvest time. These two constraints have prevented farmers from growing cash crops such as sesame, melons, potatoes and other fruits and vegetables. A comparison (See Tables VII and VIII) of small farmers (owning or cultivating less than 35 hectares) located less than three kilometers from a road with farmers located more than three kilometers from a road in western Honduras shows that among farmers owning less than 5 hectares of land, those located within 3 kilometers of a road market a larger percentage of their production, derive a larger percentage of their production from annual and permanent cash crops and have larger net incomes from crop production than farmers located over three kilometers from a road. While the opposite is true for farmers owning 20-35 hectares of land, this appears to be due to the strong orientation of farmers located over three kilometers from a road to coffee production. Annual cash crops, potatoes, vegetables, etc., are almost exclusively grown by farmers located less than three kilometers from an all-weather road.

Isolation also has prevented the flow into these areas of the few available sources of technical advice and inputs which could help farmers increase their yields. The public and private extension agents who are working in western Honduras simply do not visit villages which very often are only accessible by mules; new inputs are expensive and unprofitable.

TABLE VII

Characteristics of Farms Less than Three Kilometers from Road<sup>1/</sup>

<u>Farm Size</u> <u>(Hectares)</u>	<u>% of Crop</u> <u>Prod. Marketed</u>	<u>% Value of Crops</u> <sup>2/</sup> <u>in Basic Grains</u>	<u>% Value of Crops</u> <sup>3/</sup> <u>in Annual Cash Crops</u>	<u>% Val. of Crops</u> <sup>4/</sup> <u>Perm. Crops</u>	<u>Net Income</u> <sup>5/</sup> <u>From Crop Prod.</u>	<u># of Farms</u> <u>in Sample</u>
0.1 - 1	19	77	13	9	- \$ 158	46
1 - 2	55	41	37	21	\$ 2	126
2 - 3	42	51	6	42	\$ 55	61
3 - 5	50	37	13	48	\$ 57	58
5 - 20	65	26	16	57	\$ 405	140
20 - 35	74	23	10	65	\$1,066	40
						471

1/ SOURCE: Small Farmer Survey, USAID/Honduras-GOH Agriculture Sector Assessment, 1977.

2/ Corn, beans, sorghum, rice

3/ Sesame, melon, cotton, potatoes, other vegs., other

4/ Coffee, Sugar cane, fruits, other

5/ This calculation includes family labor as a cost, hence, negative and low income figures.

TABLE VIII

Characteristics of Farms More than Three Kilometers from Road<sup>1/</sup>

<u>Farm Size</u> <u>(Hectares)</u>	<u>% of Crop</u> <u>Prod. Marketed</u>	<u>% Value of Crops</u> <sup>2/</sup> <u>in Basic Grains</u>	<u>% Value of Crops</u> <sup>3/</sup> <u>in Annual Cash Crops</u>	<u>% Val. of Crops</u> <sup>4/</sup> <u>Perm. Crops</u>	<u>Net Income</u> <sup>5/</sup> <u>From Crop Prod.</u>	<u># of Farms</u> <u>in Sample</u>
0.1 - 1	10	93	-	5	- \$ 134	23
1 - 2	23	85	3	10	- \$ 129	47
2 - 3	36	55	14	30	\$ 24	23
3 - 5	42	55	-	44	\$ 35	19
5 - 20	65	31	1	67	\$ 482	49
20 - 35	83	16	-	84	\$1,431	6
						<u>167</u>

1/ SOURCE: Small Farmer Survey, USAID/Honduras-GOH Agriculture Sector Assessment, 1977.

2/ Corn, beans, sorghum, rice

3/ Sesame, melon, cotton, potatoes, other vegs., other

4/ Coffee, sugar cane, fruits, other

5/ This calculation includes family labor as a cost, hence, negative and low income figures.

ii. Producer Response - With Jeep-Trail

While increases in the value of agricultural production are not guaranteed with the construction of jeep-trails, improved access will reduce the risk and increase the profitability of farming. Improved access is also a necessary condition to improve the quantity/quality of services offered to farmers in newly opened areas. This should lead to growth in agricultural production in basically three ways:

- (1) an increase in the area under cultivation. Farmers will bring new land under cultivation knowing that any additional production can be transported to market at harvest time.
- (2) a shift in crop mix towards higher valued cash cash crops. Cash crops such as fruits and vegetables will become more profitable and farmers will grow more of them.
- (3) an increase in yields per acre. Where complementary technical information, credit and production inputs are provided, productivity will be increased.

Whether or not farmers in fact will respond positively to incentives to increase agricultural production will depend upon three critical considerations: 1) the distribution of transport cost savings, 2) the size of transport cost savings, and 3) the existence of non-transport constraints.

The Distribution of Transport Cost Savings

If transport cost savings are captured by intermediaries such as truckers and traders rather than by the farmers, the chief incentive (profitability) to produce more and higher valued crops will be lost. This consideration is discussed in the Social Analysis in the context of measuring the impact of the project in terms of the distribution of benefits. The conclusion reached is that for this project, the majority, if not all, of transport cost savings will be captured by the farmers.

The Size of Transport Cost Savings

As discussed above under Transport Savings, the average transportation savings in Honduras from a shift from mule to pickup truck transport is \$1.80 per ton per kilometer. Relative to most road construction projects, this is a very large cost savings. The absolute magnitude of the cost savings should be sufficient to make the difference between the profitability and non-profitability of producing cash crops in western Honduras and will make producing already profitable crops, e.g. coffee, even more lucrative. (See Tables VII and VIII.)

### Non-Transport Constraints

While the incentives to increase agricultural production after the construction of a jeep trail will be quite large, the question is still whether Honduran farmers will be able to respond to new opportunities. Farmers still may not have effective access to credit and vital inputs with which to increase output.

While this question is being looked into in detail in the context of the current update of the Agriculture Sector Assessment, some preliminary observations can be made at this time. The ability of farmers to increase their yields for specific crops is very limited in western Honduras, except in coffee growing areas. Only the National Coffee Institute has the outreach in this area and the package of technical advice, production inputs and credit necessary to raise yields significantly. Jeep trails will have to be integrated into other agricultural improvement efforts if the project is to have an effect on yields in non-coffee areas.

The extension of cultivated land area and a shift in crop mix towards higher valued cash crops can be achieved in western Honduras without the requirement of large complementary investments in either infrastructure or extension services. These changes, in fact, are those most likely to be achieved in the near term<sup>1/</sup> and can produce substantial benefits for the farmer.

Of course, the largest development impact can only be assured if an integrated economic analysis is carried out at the local level to identify all investments that are needed to increase output and income in an area. This is the approach that will be used in the proposed Agriculture Sector II Program. If included in the program, jeep trails would be only one instrument among several to be used to overcome production constraints.

### 3. The Magnitude of Expected Economic Benefits

#### a. Transport Cost Savings

Transport cost savings per family per year, due to a shift in transport mode from mule to pickup truck, were calculated for five trails in western Honduras and one in southern Honduras. The results were as follows:

<sup>1/</sup> Based on results of Guatemala's Small Farmer Survey sponsored by A.I.D. Increases in farm income, triggered by credit in this case, were found to be derived basically from the extension of cultivated land areas and shifts in crop mix, not from higher yields per unit of land.

<u>Trail Section</u>	<u>Transport Cost Savings per Family per Year<sup>1/</sup></u>
Zacapa	\$ 24
Ciliantuque	20
Ojo de Agua	17
El Tablón	15
Río Ulúa	10
Lepaera	8

$$\underline{1/} \text{ Transport Savings per Family} = \frac{(\text{Savings}) (\text{Exported Production}) (\text{km})}{\text{Families}}$$

Savings = Actual mule transport cost/ton/km -  
Nation average pickup transport  
cost/ton/km.

Production = Current level of production exported  
from area. (No expansion of produc-  
tion was projected)

Km. = Average number of kilometers over  
which production is transported.  
Usually equal to length of trail ÷  
two.

Families = Number of families in area of influence  
of trail using 1974 Census figures.

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These calculations are conservative because they include only the current level of exported production and do not include transport savings on inputs.

b. Increased Value of Agricultural Production

An estimate of the increased value of agricultural production to be derived from jeep-trail construction cannot be made at this time. However, during the development of a new trail selection procedure for the Department, the feasibility will be explored of quantifying projected changes in cultivated area, crop mix and yields per acre. An economic survey of 641 farmers in western Honduras has been completed recently as part of the USAID/Honduras Agricultural Sector Assessment. While the survey results have not been thoroughly analyzed as yet, detailed income and production data were gathered which should provide a sufficient basis for the estimation of the production changes and input cost savings resulting from increased access to markets. This should, in turn, allow the estimation of the production changes and input cost savings resulting from

increased access to markets. This should, in turn, allow the estimation of average non-transport savings income changes by predominant crop (or at least by basic grains vs. other crops) and by farm size.

#### 4. General Economic Feasibility

It is reasonable to expect that enough candidates will be found for jeep trail construction having benefit/costs ratios greater than one to exhaust the budget of this project. Surveys and benefit/cost analyses done during project development have identified 114 kilometers of candidate jeep-trails whose construction can be justified on the basis of transport savings alone (see Annex 2d). Only 76 kms. of trails in all were surveyed. The Department has requests on file totalling over 1,000 kilometers and is receiving new requests daily. Based on experience during project development, it will not be difficult to identify approximately an additional 120 kilometers of trails.

As experience is gained under the project and data is collected for a larger sample of candidate trails, the overall feasibility of providing additional and expanded A.I.D. financing through future programs, such as Agriculture Sector II, will be determined.

#### 5. Minimum Eligibility Criteria for Construction

While the project trails will be selected for construction on the basis of providing a broad range of experience in a relatively short time span rather than on the basis of the simple rank order of candidates, all trails will meet a set of minimum feasibility and desirability requirements. In order for a candidate trail to be selected for construction, the following conditions must be met:

1. The trail must not be all-weather and not be open to vehicles.
2. The trail must connect to an all-weather road.
3. There must not be other good transportation alternatives in the area.
4. No plans exist for the construction of an alternative all-weather trail or road.
5. The majority of farmers served must own less than 35 hectares of land.
6. Sufficient labor must be available to construct the trail in a timely fashion.
7. The community(ies) agrees to provide labor for construction and maintenance and establishes an organization charged with ensuring that the agreement is kept.
8. The number of families in the area of influence of the candidate trail is at least 30 per linear kilometer.

(This ensures that there will be sufficient beneficiaries as well as sufficient voluntary labor in the area for maintenance. This can be waived if people are expected to migrate into the area to use tracts of underutilized land or if income benefits are estimated to be so large that labor could be paid for maintenance work).

9. The benefit/cost ratio for the candidate trail is at least one.

The benefit/cost ratio for the candidate trails will be calculated using the equation discussed in Annex 2b. The only benefit to be quantified at the beginning of the project implementation will be transportation cost savings.

#### 6. Employment and Income Effects

The employment and income effects of the Rural Trails Project, at this time, can only be quantified for the construction phase of the project. For the period when the jeep trails are in use, only the direction, not the magnitude, of employment and income effects can be identified.

##### a. Construction Phase

During the construction phase of the project, approximately 145,000 man-days of employment of local, community labor will be generated. Within a specific area, the number of man-days of employment per person normally will be limited to 12 days (two weeks) within each month so as to distribute benefits as widely as possible and assure that the project will not interfere with agricultural production or other economic activity. The total income generated for local labor will be approximately \$164,000 during construction.

An example of the effect of the construction phase along a particular trail can be given for the 22 kilometer illustrative trail, Ciliantuque to Monte de la Virgen, described in the Cost Section of the Technical Analysis. Almost 20,000 days of local labor will be generated by jeep-trail construction over a six month period, providing approximately \$23,000 in cash and \$20,000 in food to laborers from 40 local villages for 1,233 farm families. On the average, a member from each family could work 16 days and earn approximately \$32 in wages and food.

Since the population density in the area of influence of the Ciliantuque to Monte de la Virgen trail is in the upper end of the range (56 families per linear kilometer of trail) relative to other trails surveyed (4, 15, 27, 36 and 61 families per linear kilometer), the employment and income effects on the average should be greater per family than that estimated for the Ciliantuque-Monte de la Virgen trail. If the average benefit from construction work were \$40 per family, this would represent an

almost 8% increase in the net yearly income (albeit on a one time basis) of the average target beneficiary, considerably more for the poorer families. (See Section 2.2 of the Social Analysis for average farm incomes).

b. Use Phase

The income benefits of the jeep trails while they are in use were discussed above in the Magnitude of Economic Benefits section of the Economic Analysis. Only the employment effects will be discussed here. To repeat, the major changes anticipated in agricultural production are:

- 1) an increase in the area under cultivation,
- 2) a shift in crop mix towards higher valued crops and,
- 3) an increase in yields per unit of land.

The employment effects associated with any of the anticipated change in agricultural production in areas affected by newly constructed jeep trails are expected to be positive. This is due to the types of crops currently grown in western Honduras and its mountainous terrain. The mountainous terrain and limited possibilities for increased acreage in these areas militate against the introduction of highly capital intensive production packages based on increasing the amount of land to be cultivated per person with large tractors. At the same time, the types of crops, tree crops and fruits and vegetables, having the greatest potential for growth in the area, have relatively labor-intensive production packages based on increasing yields per unit of cultivated land. As new land is brought into production, as crop mixes shift to higher valued crops and as yields per acre are increased, agricultural employment should rise.

As agricultural activity increases in the area of influence of a trail, employment opportunities will also be enhanced in the services and artisan (or informal) manufacturing sector in the same area. The number of traders, bakers, tailors, shoemakers, etc., in the area of influence of a trail, and perhaps more importantly in nearby market towns, vary directly with the level of agricultural activity in these rural areas.

## D. Social Analysis

### 1. Introduction

The following analysis is based on two primary sources of data: an economic survey of small farmers conducted as part of the Agricultural Sector Assessment, which provides detailed income and production data for 641 small farms; and the baseline survey of villages in the Ocotepeque area of the western region of Honduras, completed for the Non-Formal Rural Education Project.

The data from both sources is region-specific for the western region of the country, where the Rural Trails project is to be implemented. In addition, data from the economic survey is available for a sub-sample of 167 farms which are located more than three kilometers from the nearest vehicular road. The data are more reliable than heretofore available sources for that region, as they were collected by trained researchers and analyzed in a preliminary fashion by computer methodology. The data from the Ocotepeque survey has been analyzed intensively in a three-step process: examination of the marginals (frequency distributions), formulation of hypotheses about the interrelation between variables, and computer cross tabulation to test the hypotheses. On this basis, a complete report of economic, political and social structure in the Ocotepeque region was written.

This analysis profiles the target beneficiaries with the information available from the above sources and examines the project design in relation to the socio-economic structure of the region, with a view to identifying the goodness of the fit of the project design to local conditions. The project's design is discussed as it relates to project implementation, especially local maintenance, and to the distribution of benefits to be derived from trail construction.

### 2. Profile of Target Beneficiaries

#### 2.1 General Overview

The western region of Honduras comprises 16% of total national area. It is the most mountainous region of the country, with only 3% of Honduras' valley land located in the region. It is the most densely populated region, with 1,218 persons per square kilometer of arable land as compared to the national average of 105. Farms in this area are smaller, on the average, than in the rest of the country - five hectares in the region as compared to six hectares for the country. They are significantly less subsistence oriented than the rest of the country, probably due to the importance of coffee in western Honduras. Small farms in the western region market 51% of their production, compared to the national average of 38%.

The settlement pattern in this region is as follows: There are three community types: major market and administrative centers, smaller market towns, and villages. The market centers are located in fertile valleys which are important crop producers; Santa Rosa and Ocotepeque are linked by paved highway to the commercial center of the country; Gracias, Marcala, San Marcos and La Esperanza are linked by all-weather gravel roads to the central highway. The smaller market towns are located in smaller valleys and are linked by gravel roads to the major centers. The great majority of villages are accessible only by foot trail.

The region has an agrarian economy which is shaped primarily by the colonial experience. The basic structure of market-administration centers, with smaller satellite market towns, with their smaller satellite villages, was formed during the colonial period. Communication routes between valleys were established to link the major colonial towns, which are now the market centers. The class structure of the region remains much as it was during the colonial period: peasant agriculturalists, a petite bourgeoisie of artisans and small traders, and a rural landed elite are all linked in a variety of social relationships that are a part of the agrarian economy. The landed elite and petite bourgeoisie live mostly in the market centers; 60% of the families in Ocotepeque, for example, are in these two classes. The smaller market towns are primarily inhabited by peasant agriculturalists, with a 5 to 20% complement of traders and/or landed elite.

The flow of agricultural produce follows the communication routes from villages and farms, to market towns and major market centers. The traditional social pattern of this flow has been from peasant producers to the small traders and landed elite. Where all-weather gravel roads have been introduced, much of the flow is now handled by truckers, who are usually small trader-entrepreneurs or members of the rural landed elite who have invested in trucks.

## 2.2 The Target Beneficiaries: Peasant Villagers

The target beneficiaries of this project are the semi-subsistence and small-scale, market oriented agriculturalists, farming less than 35 hectares and living in villages located more than three kilometers from the nearest vehicular road.

The agriculturalists live in hamlets scattered throughout the entire western region, linked by trails to small market towns. They deliver their goods by foot or mule. The semi-subsistence agriculturalists own smaller farms, one-tenth up to two hectares, grow mostly basic grains with a small amount of permanent crops, mostly coffee, and market a small percentage of their production to purchase necessary commercial and industrial goods. The small-scale, market-oriented agriculturalists own relatively larger farms, 2-35 hectares derive a large portion of their income from coffee, a relatively smaller portion from basic grains, and market a large percentage of their production.

Neither the semi-subsistence nor the market-oriented agriculturalists grow a significant amount of annual cash crops such as vegetables or melons. The average agriculturalist has a net income (the calculation of which does not impute a value for family labor or depreciation) of \$521. Table IX provides a breakdown by farm size of net income, percentage of the value of total production marketed, and percentages of the values of crops in basic grains and permanent crops.

TABLE IX

Characteristics of Farms by Farm Size\*

<u>Farm Size (Hectares)</u>	<u>Average Net Income</u>	<u>% of Crop Prd. Marketed</u>	<u>% Value of Crops in Basic Grains</u>	<u>% Value of Crops in Permanent Crops</u>	<u>Number of Farms in Sample</u>
0.1 - 1	\$ 126	10	93	5	23
1 - 2	254	23	85	10	47
2 - 3	432	36	55	30	23
3 - 5	393	42	55	44	19
5 - 20	859	65	31	67	49
20 - 35	2,116	83	16	84	6
					167

\* SOURCE: Small Farmer Survey, USAID/GOH Agriculture Sector Assessment, 1978.

2.3 Social Organization

Social structure in the villages of western Honduras is primarily based on the family as the principal economic unit for both production and consumption. There are no all-encompassing politico-religious community structures such as one finds in the western highlands of Guatemala. There are, rather, two types of community organizations with political and administrative functions. The first type is the municipal political structure, represented in most villages by an assistant mayor who is responsible to the mayor (alcaldía) in the municipal seat. The second type is the patronatos. The latter are associations of villagers usually formed ad hoc to carry out community betterment projects such as school building or repair, introduction of public water service, and other small community development projects. Patronatos are to be found in almost any village in the area.

More than half of all adult villagers in the region belonged to a patronato at the time of the survey, if the data from the Ocotepeque area is representative of the region. Probably a vast majority of western community residents belong to Patronatos during their lives.

All adults in the area are tied in, by law, to the alcaldía municipal structure.

The patronato is in many cases formed in response to some stimulus which is external to the village. In the great majority of cases the village school teacher is the organizing force around which the patronato is established, primarily because their principal function is related to school construction and maintenance. However, social promoters from various government ministries work through patronatos to carry out projects.

There are normally no dues or fees collected by patronatos. The sources of revenue for most patronatos include lotteries, raffles, and small parties which are organized periodically to raise funds.

The assistant mayor is the link between the municipal administrative structure and the village. His authority is backed by the force of law, while the patronatos have no coercive authority. In theory, these structures are distinguishable. In practice, the roles of assistant mayor and presidency of the patronato often are exercised by the same individual, especially in small villages.

#### 2.4 Attitudes

The attitudinal variables analyzed in the Ocotepaque study are of relevance to this analysis. Attitudes towards group labor are very positive, as more than 90% of those surveyed are favorably disposed to working in community self-help projects. Three quarters of those surveyed have in fact worked in a community self-help project, many of them more than once.

The other variable is a measure of self-reliance. Several questions were asked in an effort to get at the degree of dependence on outside stimulus to get projects done. There is a marked emphasis among the population on the necessity of self-reliance, typified by the proverb "the Lord helps those who help themselves". There is a widespread attitude, fostered by numerous unfulfilled promises of politicians, extension agents, and government social promoters, that the village will only improve if villagers work for its improvement.

#### 2.5 Perceived Needs

The most common projects desired by villagers are irrigation and roads, one to improve production and the other to facilitate distribution of agricultural goods. As mentioned elsewhere, the GOH has been inundated with requests for road construction. There is no question, then, that this project responds to needs perceived in the region.

### 3. Project Design and Local Social Structure-Construction and Maintenance

The project has been designed so that local village organizations will have a limited responsibility for the construction and the primary responsibility for the maintenance of the jeep trails. During the construction phase of the jeep trail, local village organizations will be required to locate and insure the availability, at no cost beyond the project wage, of construction materials such as sand, gravel and rock, and to organize the provision of labor. Neither responsibility should present a problem.

During the projected maintenance phase of the project, a period of five years, local village organizations will be required to raise funds to replace broken or lost tools and to provide voluntary labor. The problem of maintenance, which requires sustained effort and some technical know-how, has been the Achilles heel of many small projects in villages in the area. For example, there are some water systems that are inoperable because of lack of simple technical knowledge at the local level.

The problem of sustained effort has been addressed directly in the design of the project. First of all, the engineering design of the trail has been made to minimize both the amount and the sophistication of maintenance required. Maintenance requirements for the trails have been estimated at two man-days per month per kilometer. Secondly, the selection process for trails guarantees a minimum of thirty families per kilometer of trail. As a result, the typical trail will require no more than one day of labor per year from each able-bodied male in its area of influence.

The design of the project also addresses the problem of technical know-how. All construction supervisors and foremen who will be trained in trail construction techniques are expected to be recruited locally. Each trail, therefore, will have one general supervisor and several foremen (one for each group of approximately 20 men) with adequate technical knowledge. In addition, the GOH will hire a maintenance inspector/promoter who will visit trails to provide technical assistance. The GOH will finance an inspector/promoter during the execution phase, plus a minimum of three years thereafter, unless A.I.D. otherwise agrees in writing.

Of the two local organizations, the alcaldía or the patronato, which could take the responsibility for trail construction and maintenance, the patronato appears to be more feasible. The patronato should have no trouble recruiting the level of effort of voluntary labor required for maintenance and can raise the estimated \$4 per year per kilometer for replacement tools through lotteries and parties. While the alcalde legally has more power, he has few means of raising revenue unless, of course, he is also the president of the patronato, and the populace could

come to see road maintenance as an obligation to the government rather than a popular initiative.

#### 4. Benefit Incidence

##### 4.1 Types of Economic Benefits

The principal financial benefits postulated from the construction of jeep trails with this project are transport savings, chiefly the per kilometer savings of moving cargo by pickup truck rather than mule, and increased incomes resulting from growth in agricultural production. Though the health, education, agricultural, and other socio-economic benefits are expected to be significantly increased, only savings in transport costs will be discussed here since they are expected to be large enough to satisfy the minimum economic feasibility requirement for the project, and the inclusion of other benefits complicates the discussion without changing its basic structure or outcome.

##### 4.2 Distribution of Economic Benefits - Farmer vs. Trucker

###### a. The Current Setting

There are two common ways in which the isolated peasant farmer of western Honduras transports and sells his produce. The farmer rents a mule to transport his produce to the nearest transible road where he then either sells his produce to a buyer/trucker or buys transport services (bus or truck) to take his produce to the nearest market town.

###### b. The "With Jeep Trail" Setting

With the introduction of a jeep trail, the farmer will forego the expensive mule trip to the (previously) nearest transible road and will either sell his produce to the buyer/trucker who will now come into the communities located on the trail or rent the services of a truck to haul his produce to the nearest market town. In both cases economic theory holds (under competitive conditions) that the farmer will realize transport savings equal to the savings in the cost of mule transport minus the cost of transport by pickup from the farm to the junction of the trail with the (previously) nearest transible road. The question then is whether transport savings will be captured by the farmers or by the truckers in the form of monopoly profits.

###### c. Farmer vs. Trucker

It is argued that a large proportion, if not all, of the transport savings brought about by the construction of jeep trails will accrue to the farmer

and will not be captured by the truckers. First of all, while people in the mountainous areas of Honduras are isolated in terms of ease-of-access, they are in communication with the rest of the country and would be aware of such important information as differing transport costs and produce prices in nearby regions. Secondly, the new location of the sale (near the farm rather than 5-20 kms. away) will lessen the pressure on the farmer to sell at what he considers to be too low a price. The trucker (called a "Coyote" in Honduras) will be less likely to be able to use such tactics as buying along the main road as darkness approaches, knowing that the farmer must either sell at a low price or suffer spending the night sleeping next to the road. Thirdly, the trail selection process gives higher priority to trails having relatively higher population densities and proportions of cash crops, thus insuring a large enough supply of produce at harvest time to warrant interest by several truckers and promote competition. For one trail constructed during the past year under the SDA project, the farmers, in fact, reaped a larger transport savings than expected. The farmers saved the entire cost of mule transport as expected but also were not charged anything for the trip from their farms to the road junction (a distance of 7 kms.) by the truckers since the short haul was only part of a longer haul to a market town 60 kilometers away.

#### 4.3 Distribution of Economic Benefits - Larger Farmer vs. Smaller Farmer

There is no question that the principal beneficiaries of the project will be farmers owning less than 35 hectares of land. This is simply due to the fact that larger farms are almost exclusively found in valleys and that the jeep trails will be constructed in mountainous terrain. In addition, the selection process of the economic analysis will reject trails there the majority of farmers own more than 35 hectares.

While all farmers in the 0-35 hectares size category should benefit from the project, the major proportion of the benefits will be captured by farmers owning between 2-35 hectares. The middle size farmers have greater growth potential and market a larger percentage of their crops.

#### 4.4 Social Benefits

There are a series of social benefits to be derived from the construction of trails that are transible year-round. During the rainy season, communication is cut-off for a great number of villages. This reduces the frequency of traffic in both directions, i.e. from the village to municipal centers and vice versa. This lack of communication has consequences especially for health care. On the one hand, access to health care is severely reduced for the isolated villages. On the other hand, health assistance by technical personnel who would visit the villages is reduced because of the conditions of the trails.

Jeep-trail construction will also result in greater social contacts between villages and market towns. This benefit will accrue mainly to the women and children of the villages. Both of these groups have less contact with and travel less frequently to surrounding market towns than adult males.

#### 4.5 Non-Beneficiaries

There is one group of persons who might be harmed financially rather than benefitted by the project. These are the owners of mule trains, who transport produce along foot trails. It must be noted, however, that most of these are traders; that is, the bulk of hired transport is provided by individuals who have other enterprises. There are several factors to be considered. One, the utility of their mules will not be entirely lost; as the trader lives in a market center linked to many villages, he will continue to send his mules to villages that are not linked by one of the project trails. His volume will be affected, but the sheer number of villages presently only accessible by footpath make it highly unlikely that all mule traffic will cease. Furthermore, temporary losses of income can be absorbed by these traders because of the numerous other enterprises they are involved in. Since traders often are the first people to invest in pickup trucks, this class may eventually be one of the principal beneficiaries of the project.

#### 5. Impact on Women

The impact on women should not be significantly different than it is on men except for the direct benefits accruing from construction wages. While there is no tradition in Honduras for women laborers on road crews and it is highly unlikely that interest in participating in the actual excavation of trails or construction of bridges could be generated, women will, however, have opportunities for leadership and participation in decision-making in the project and benefits accruing from it.

Women will be involved in the project's decision-making process because of the important role foreseen for the Patronato in the project and the important role that women play in Patronatos in western Honduras. Of the 45 Patronatos studied as part of the Ocotepeque study, 60% of Patronato membership was found to be female and 30% of the Patronatos were headed by women. Furthermore, the principal advisor of the Patronatos is usually the local school teacher, and, 70% of school teachers in the area are women. Experience has also shown that women in this western region also usually administer the distribution of food-for-work commodities at the community level. This will be an important responsibility given the large food-for-work input programmed for the project.

Another positive, though limited benefit, will be the income generation opportunities for women to sell food and drink to construction workers. The income generated from wages paid by the project, however, will not go to women directly, since as mentioned above, they will probably not participate directly in the construction tasks.

The greatest positive benefits for women should come in the form of increased access to social services which are expected to be available after the trail is completed. These indirect benefits would be the increased access by village women to health services and education as well as greater exposure to opportunities offered by the GOH for women to participate in these fields. Even without new GOH programs of services delivery, an improved trail would still allow more accessibility to existing services in the surrounding towns. An assured GOH commitment to the extension of these social services to the trail villages would maximize these potential social benefits. As pointed out in other sections of this paper, these assurances are being considered as part of the current selection process and as part of a more integrated planning to be proposed in follow-on programs.

## E. Administrative Analysis

### 1. Institutional Capacity

The project will be implemented by the Department of Labor Intensive Roads of the Directorate of Highways in the Ministry of Communication, Public Works and Transportation. The Department was formed as a working unit in April 1976 to serve as a counterpart to an experimental, labor-intensive access road construction project of the World Bank and achieved official Departmental status in January 1978. The capacity of the Department will be discussed in terms of leadership, structure, role and resources.

#### a. Leadership and Structure

The leadership responsibilities within the Department have been basically carried out by two foreign advisors (contracted by the World Bank) from April 1976 until December 1977. This was due to two factors: first, the unit formed in April 1976 lacked formal Departmental status within the Ministry and therefore did not have a position for a chief of the Department and, second, the unit did not have any personnel with experience in labor-intensive road building techniques. Both of these factors have been overcome as of January 1978 and the foreign advisors will be turning responsibility over to the new Chief of the Department who has already been named and is expected to be on board in February, 1978.

#### b. Role

The current mandate of the Department is to direct a labor-intensive access road construction program in the poorer regions of Honduras. The project will reinforce this role by providing additional technical and financial resources as well as introducing a new type of access "road" with perhaps vast potential for replicability in Honduras. Personnel of the Department are young and Engineers for the most part are committed to the Department's objective which is "to develop road construction projects utilizing campesino hand labor".

#### c. Technical and Administrative Resources

Because of the year and a half of experience the Department has had in labor-intensive access road construction with technical assistance from the World Bank, the Department now has an adequate base of technical and administrative expertise on which to build a larger program. Under the GOH-World Bank program, 80 kilometers of access roads have been improved or newly constructed in the Southern region of Honduras. The Department has gained experience in promotion, project selection,

construction, training, food distribution and overall organization and administration of labor-intensive construction projects.

The Department currently consists of three engineers, two accountants and one secretary. The new, approved staffing pattern for CY 1978 authorizes an increase to: one head of the department, two planning engineers, two economists, five engineering supervisors, one maintenance inspector/promoter, two accountants, one food-for-work administrator, one secretary and one messenger. The Department also has access to and utilizes other technical services of the Ministry such as drafting, soil testing, and topographic surveying. In addition, the Department has technical assistance (two full-time engineers) which will continue to be provided by the World Bank for at least another full year.

## 2. Recurrent Budget Analysis of Implementing Agency

The budget of the Department is expected to double (\$250,000 to \$500,000) between CY 1977 and CY 1978. At the \$500,000 level, the budget is sufficient to carry out a modest road improvement and construction program of approximately 140 kilometers per year without external financing (except for food-for-work).

The proposed CY 1978 budget provides \$90,000 for staff salaries, the rest of the budget being divided among vehicles, equipment, tools and materials and local construction supervision and labor. Funds for labor payments will be augmented with approximately \$500,000 in food-for-work from the West German Government.

The addition of the new activities represented by the provision of \$400,000 in A.I.D. grant funds over a two year period, will not impose a large burden on the Department's operating expense budget. (Since the community has the responsibility for maintaining the roads constructed by the Department, only operating expenses are relevant). The increase in operating expenses, including the acquisition, operation and maintenance of three vehicles, the salary and support cost of a supervisory engineer and a maintenance inspector, social security payments, office space and supplies, and salaries and support costs for economic feasibility data collection and analysis is estimated to be \$122,000 over two years (5 years in the case of the maintenance inspector/promoter). The first year's costs can be absorbed in the planned expanded budget of the Department.

It should be noted that due to the nature of the work to be done and the way that the work is administered by the Department, the size of the overall program can be expanded with external funds, without a large increase in recurrent operating expenditures. Most expenditures will be for tools, materials, local labor costs, and contracted supervision, all costs which are not necessarily recurrent.

### III. Implementation Arrangements

#### A. Analysis of Recipient's and A.I.D.'s Administrative Arrangements

##### 1. General Administration

The formal initiation of the Project will take place with the signing of a Project Agreement between A.I.D. and the Government of Honduras.

The Ministry of Communications, Public Works and Transportation (the Ministry) will designate a person within its Department of Labor Intensive Roads to administer the project. USAID/Honduras will designate a member of its engineering staff to provide liaison with the Ministry. The Chief of the Mission's Office of Development Engineering will be designated as A.I.D.'s Project Manager.

A rotating fund will be set up in the Ministry to pay for local construction costs, e.g. salaries and materials. A.I.D. will make advances to establish and replenish the fund. The Ministry will submit monthly vouchers to USAID/Honduras for reimbursement--thereby insuring the continuous capitalization of the rotating fund until the end of the project.

##### 2. Executing Unit

The Department of Labor Intensive Roads will be the executing unit in charge of overall project implementation including: trail selection, organization of the local community, trail layout and/or design, purchase of materials, supervision of construction, transportation, food distribution, general administration and evaluation.

##### 3. Trail Selection

The Department will carry out the selection of trails in accordance with the procedure presented in the Economic Analysis section. The A.I.D. Mission will be consulted with regard to the selection of individual trails.

##### 4. Organization of Local Community

A standard agreement, acceptable to A.I.D. and the Government, will be signed between the mayor of the municipality and/or Patronato and the Department describing the subproject and outlining procedures and responsibilities.

5. Trail Layout and/or Design

Using design specifications agreed to between A.I.D. and the Department, the Department will lay out proposed trails. While there is expected to be consultation between the GOH and A.I.D., the Mission does not expect to require formal A.I.D. approval of individual trail designs.

6. Purchase of Tools and Materials

A.I.D. will be responsible (in consultation with the Department) for the purchase of tools financed by A.I.D. The Department will purchase locally available construction materials. The Department will keep an inventory of all project-related tools and materials.

7. Supervision of Construction

The Department will supervise all construction on a day-to-day basis using its normal procedures. The USAID/Honduras Mission will inspect construction and review programs at regular intervals.

8. Transportation

The Department will be responsible for the transportation of engineers, materials, food and tools.

9. Food Distribution

The Department will be responsible for the complete administration of food provided by other donors (CARE for the first six months and the World Food Program thereafter) to supplement wages paid under the project including: programming rations, transportation, storage, distribution in accordance with the normal procedures of the food donors, and keeping appropriate records of distributions. Under the CARE program, the Department will plan delivery periods, transport the food from the CARE warehouse in San Pedro Sula to the construction area, store the food at the construction area in small store areas provided by the community, and distribute the food on the basis of the payroll. In addition to the above, under World Food Program assistance, the Department would arrange (through the National Welfare Agency, the JNBS) for the warehousing of the food before its distribution to the construction areas. CARE and WFP will retain the responsibility for monitoring their food distribution. The Department will solicit the assistance of nutritionists, from such an organization as the Peace Corps, to demonstrate most palatable ways of preparing the donated foods.

10. Evaluation

The Department will keep records on construction progress, including a detailed breakdown of man-days required and costs per kilometer. Quarterly progress reports will be submitted to USAID/Honduras.

Technical services will be contracted by USAID/Honduras to carry out approximately two to three case studies. The case studies will measure the impact of trails constructed under the project in terms of such aspects as farm gate prices, transportation costs, benefit incidence, social effects, and local agency execution effectiveness.

## B. Implementation Plan

### 1. Responsibilities of Each Party

a. A.I.D. expects to provide (subject to the signing of a formal Project Agreement) the following over the two year life of the project:

- i. Technical Assistance: Contracted services to carry out impact evaluations before and after the construction of 3-4 selected trails and to develop a rural trails selection methodology prior to the evaluation of Phase I of the project in November, 1978. Estimated cost is \$40,000.
- ii. Commodities: Materials, hand tools and other construction equipment to be used during trail construction. Estimated cost is \$157,000.
- iii. Other Costs: Local supervision and general labor costs for trail construction. Estimated cost is \$163,000.
- iv. Contingencies: Estimated cost is \$40,000.

b. The GOB is expected to provide (subject to the signing of a formal Project Agreement) the following over the two year life of the project:

- i. General Administration: Approximately 10% of the time of the chief of the Department and office space and supplies. Estimated cost is \$9,000.
- ii. Technical Services: The services of a full-time supervisory engineer to select and design trails and supervise construction. The part-time services of an economist for trail selection. Estimated cost is \$27,000.
- iii. Ministry Backup Support: The services, as needed, of such offices as topography, drafting, soil laboratory and design. Estimated cost is \$2,500.
- iv. Transportation: One dump truck, one platform truck, one pickup, with operating and maintenance funds, as well as two drivers. Estimated cost is \$58,200.
- v. Social Security: A 3.5% of salary contribution to labor payments. Estimated cost for local labor and supervision is \$6,000.
- vi. The services of maintenance inspector/promoter: Estimated cost for 25% of a total of 5 years' time is \$3,125.
- vii. Dynamite: Estimated cost is \$17,000.

c. The communities participating in trail construction will donate local construction materials and office space for the supervising engineer and will assist in the distribution of food-for-work. They will also maintain the trails. Estimated cost is \$48,000.

d. Food-for-work donors will provide approximately 144,000 daily rations of food.

## 2. Yearly Work Cycle

It is expected that the project will be approved in February 1978. After approval, the following activities will be initiated before a Project Agreement is officially signed:

a. Trails to be constructed in CY 1978 will be selected by the GOH in consultation with USAID/Honduras. The selection will be made in accordance with the selection process described in the economic analysis so that construction under the project can be begun as soon as the Project Agreement is signed, hopefully in March 1978. This will allow the project to take advantage of as much of the 1978 dry season as possible and gain the maximum experience for the proposed Agriculture Sector II program.

b. A PIO/C for hand tools will be drafted and informal quotations will be solicited.

c. A Congressional Notification and Request for Allotment will be sent to AID/W.

d. A Project Agreement will be drafted.

e. Proposals will be obtained from appropriate local technical assistance sources to carry out case studies.

f. The Ministry will confirm the availability of transport for the project.

When the Project Agreement is signed (March 1978), USAID/Honduras will order a first package of hand tools and contract appropriate technical assistance to carry out case studies. The Department will contract a supervisory engineer who will in turn set up a field office, design the first trails and organize community construction crews. Construction will begin as soon as tools arrive.

During the first half of CY 1978 and while the first trails are being constructed, the selection of the rest of the trails to be constructed under the program will be completed.

The second half of CY 1978 will see the completion of the first set of trails, the completion of the first impact evaluations of selected trails, the evaluation of the construction costs and administrative arrangements of the first year, agreement on an inter-agency coordination procedure to advise for trail selection, completion of a trail selection methodology, and the development of a work plan for CY 1979. A decision also will be made at this time as to whether to include financing for the Department's jeep trails and/or access road program in the proposed Agriculture Sector II program.

3. Methods by which beneficiaries will participate in decision-making

Local communities will have two specific opportunities to participate in the project's decision-making process. First of all, the communities will initiate the process of project selection by sending a request into the GOH. Secondly, the route of the trail will be selected in consultation with community leaders.

C. Evaluation Plan

1. Operational Progress

In order to allow the timely evaluation of trail construction, the Department will keep records on construction progress, including a detailed breakdown of man-days of labor required and costs/km. for each trail. The Department will submit a report to A.I.D. on each trail constructed soon after its completion. The Department will also submit a quarterly progress report to A.I.D. summarizing individual trail reports and commenting upon and recommending solutions to problems encountered during implementation.

2. Impact Studies

Appropriate technical assistance will be contracted to carry out approximately two case studies to determine the impact of trails constructed under the project. Such aspects as changes in farm gate prices, transportation methods and costs, social effects, local agency execution effectiveness, and the use and availability of public services will be covered. A calculation of the benefit/cost ratio for the specific trail will be made and the incidence of benefits will be determined.

The case studies will be undertaken during the first harvest season after the completion of construction since it is the most active period of economic activity.

PROJECT PAPER

HONDURAS - RURAL TRAILS, 522-0137

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ANNEXES

1. AID/W PID Approval Cable
2. Project Technical Details
  - a. Preliminary Engineering Designs
  - b. Derivation of Simplified Benefit/Cost Ratio
  - c. Summary and Critique of GOH Rural Road Prioritization Approach
  - d. Benefit/Cost Analyses
3. Initial Environmental Examination
4. Logical Framework
5. Statutory Checklist
6. Grantee's Application for Assistance

AID/W PID Approval Message

The following is the text, with Mission comments interspersed, of STATE 7898 (1976) which approved the Rural Trails PID:

Rural Trails, Dols. 400,000 Grant (Dols. 134,000 in FY 1978) PID is approved. The following are some questions that need to be answered in a PRP, if the Mission desires to prepare one, or the final PP:

- The nature and adequacy of the GOH contribution. Will the GOH be willing and able to continue the program after completion of the A.I.D. contribution? For Mission response see Administrative Analysis.
- How many communities and people will benefit? How will the activity be focussed to assure that large land holders are not benefitted disproportionately? For Mission response see Economic Analysis, section 6 and Social Analysis, section 4.
- Should A.I.D. use grant funds to pay local salaries of unskilled labor in this self-help project rather than increasing the GOH's cash contribution and/or A.I.D.'s Food-for-Work contribution? Mission response:

Since this is an experimental project which will provide data for a proposed, expanded, A.I.D. financed program, the Mission feels that grant funding is appropriate even for local costs. The use of food-for-work cannot be expanded because of daily ration limits.

- How adequate is the projected local community contribution? What has been the Mission's experience on local contributions in SDA activities? Mission response:

While the local community contribution towards construction is a small portion of this project, it is of a larger magnitude than contributions usually made under the SDA project. The Mission dropped the self-help, labor contribution to construction discussed in the PID because the effort needed to construct jeep trails is far beyond that required for the usual water supply or school house constructed under the SDA projects. It would also have been administratively infeasible for the GOH to pay less than the minimum wage (including food-for-work).

Community contributions during the maintenance phase are expected to be quite large but manageable. (see Social Analysis, section 3).

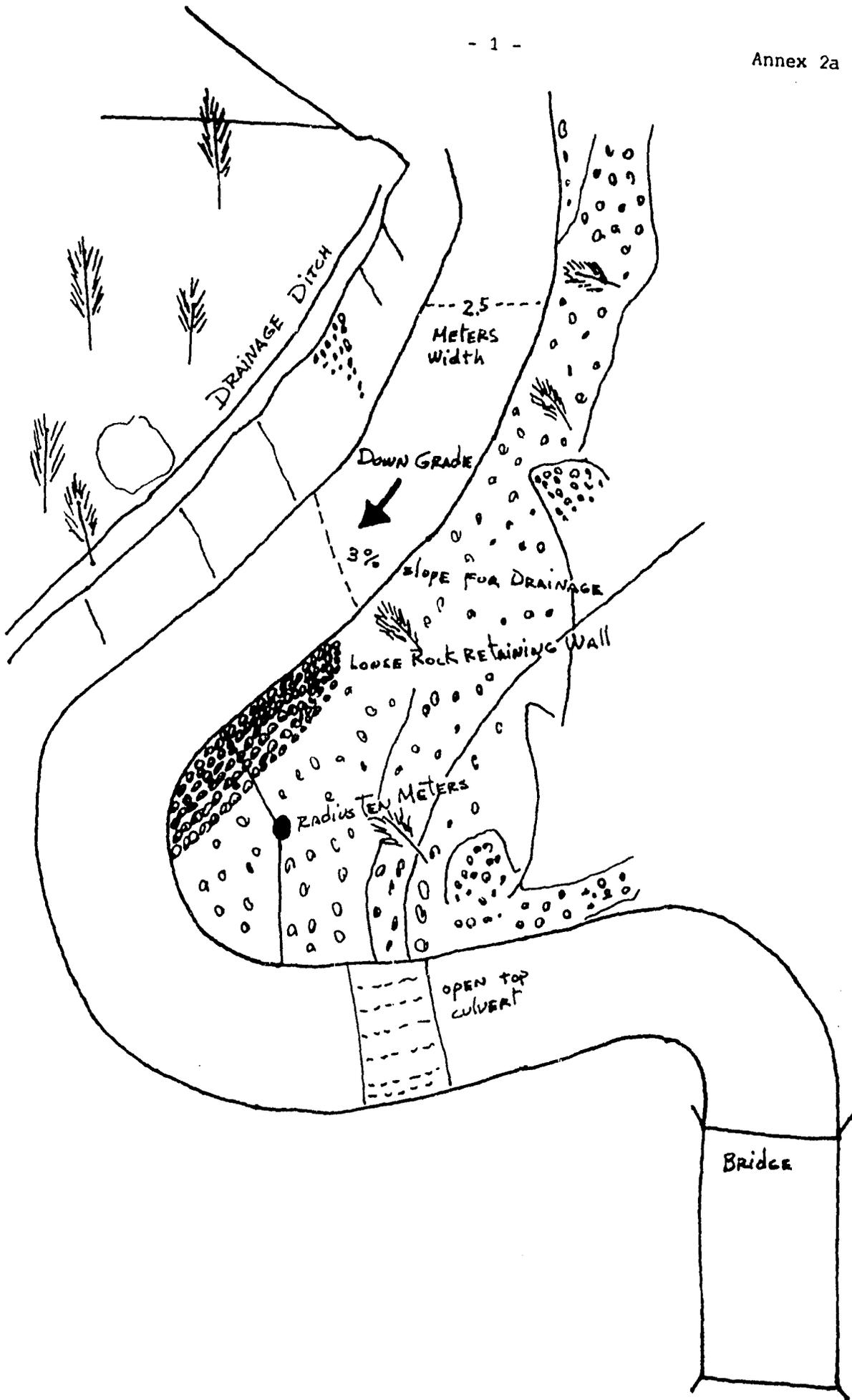
- What is the rationale for the level of projected funding? Why was an output of 267 kms. chosen? Why do trails need to be six feet wide? Mission response:

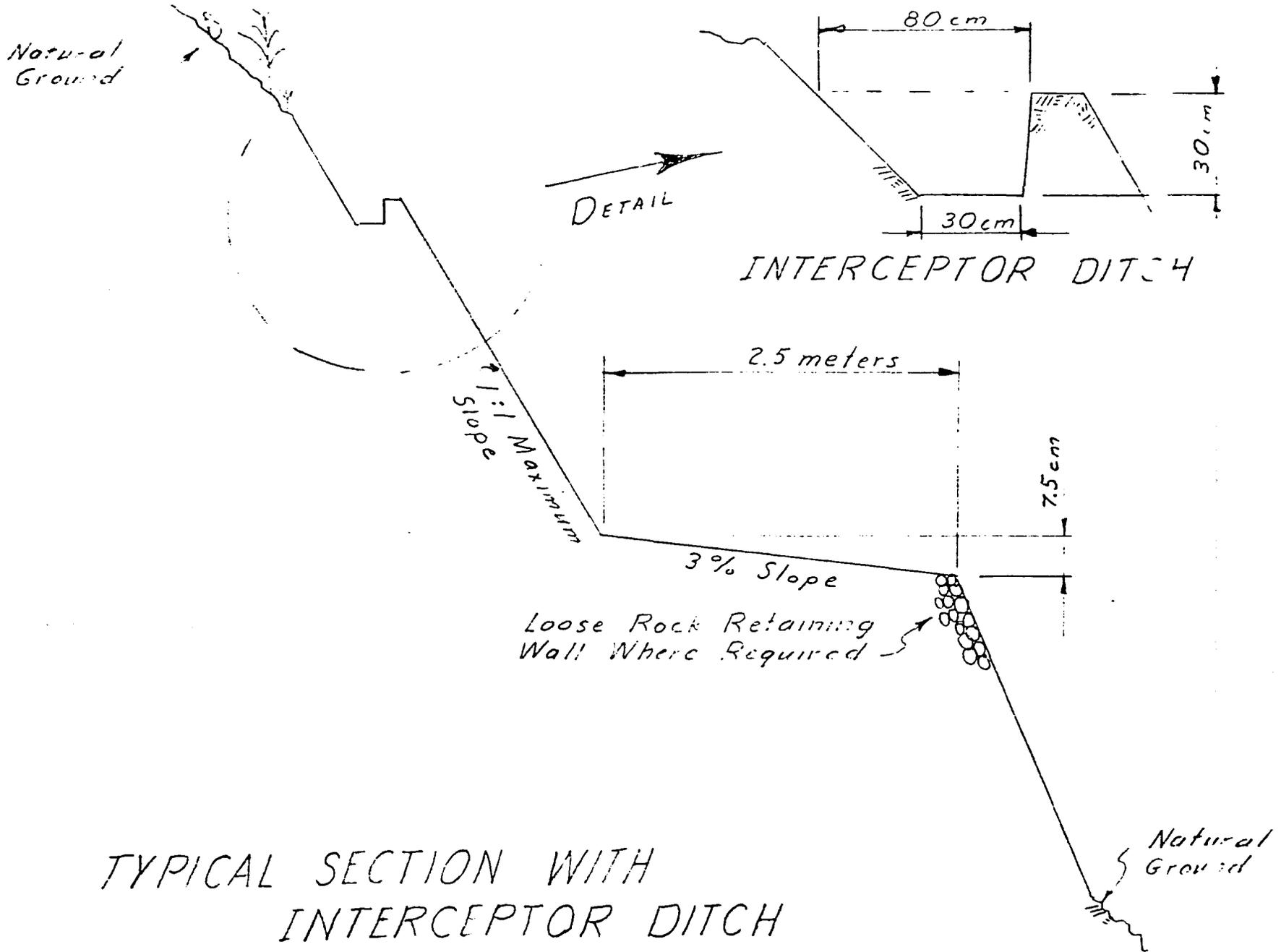
The projected level of funding was chosen to allow significant experience to be gained during a two year pilot project. The output of 267 kilometers of construction discussed in the FID has been reduced to 165 kilometers for the following reasons: 1) the addition to the project of experimental design features, such as impact evaluation studies and the development of an appropriate selection procedure; 2) increased project costs for vehicular rather than foot bridges; and 3) the inclusion of a contingency/inflation fund.

The width of the trails is discussed in the Technical Analysis.

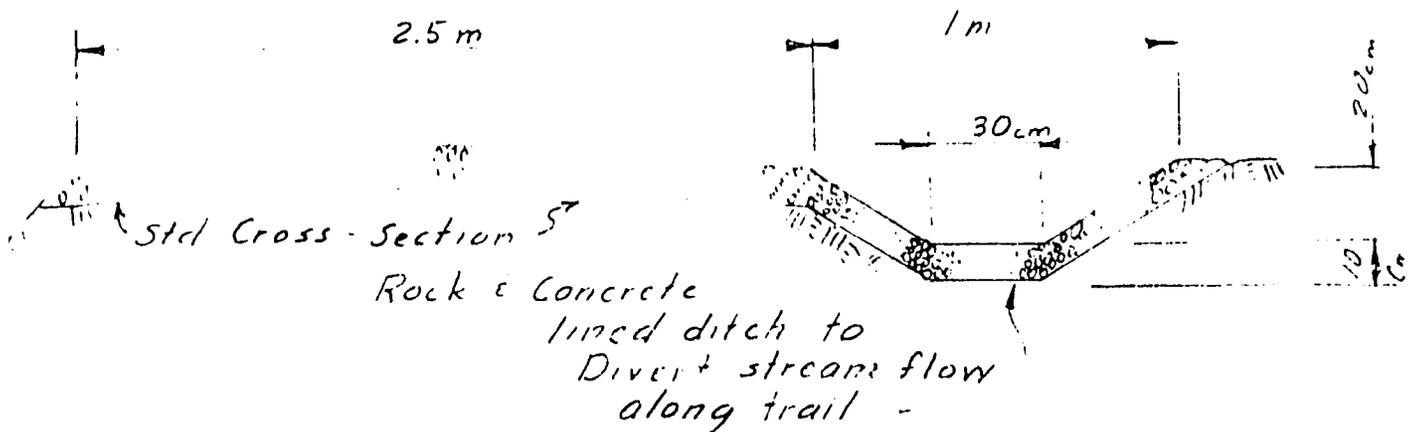
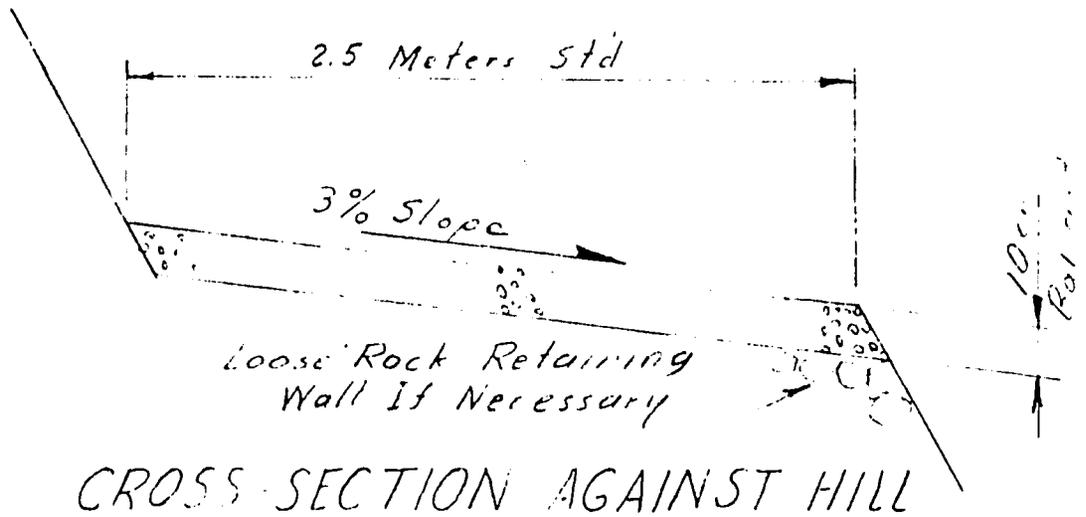
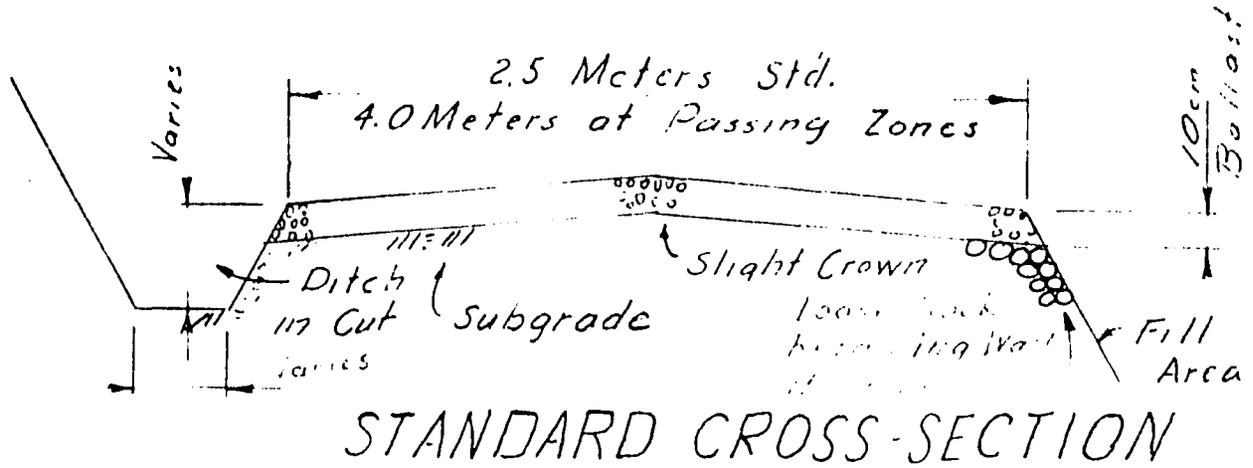
- What will be the environmental and sociological impact of upgrading these trails? Mission response: The environmental impact is discussed in Annex 3. The sociological impact is discussed in the Social Analysis.
- Is there adequate cost justification and design information to meet the requirements of section 611? Mission response:

Yes. See the Technical Analysis.

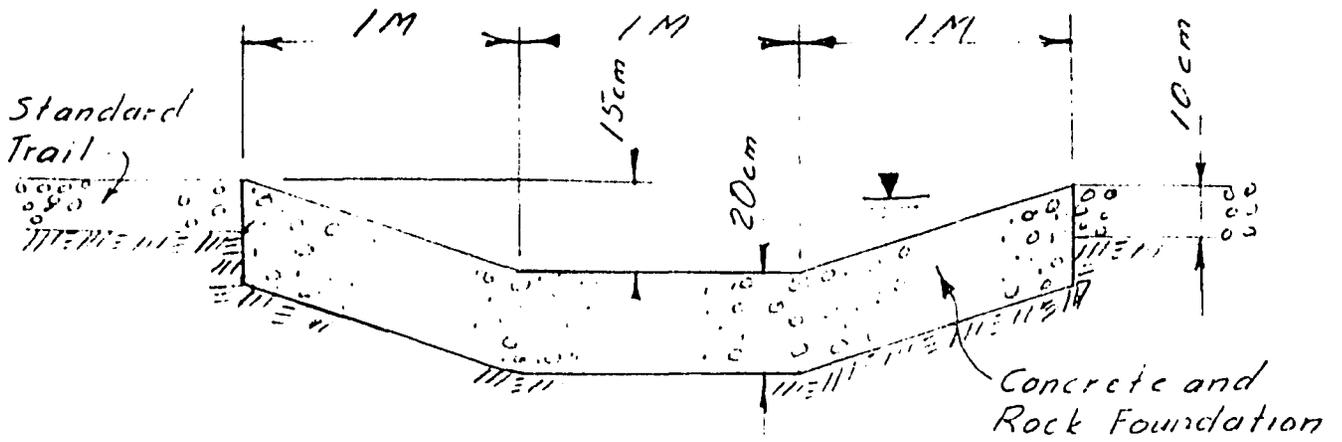




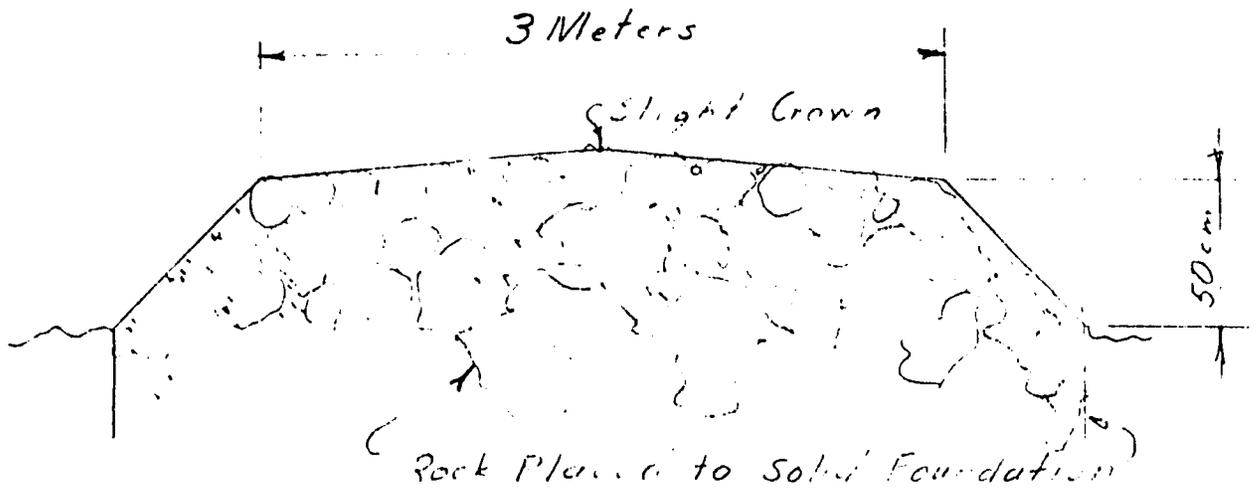
TYPICAL SECTION WITH INTERCEPTOR DITCH



### LINED DRAINAGE DITCH SECTION

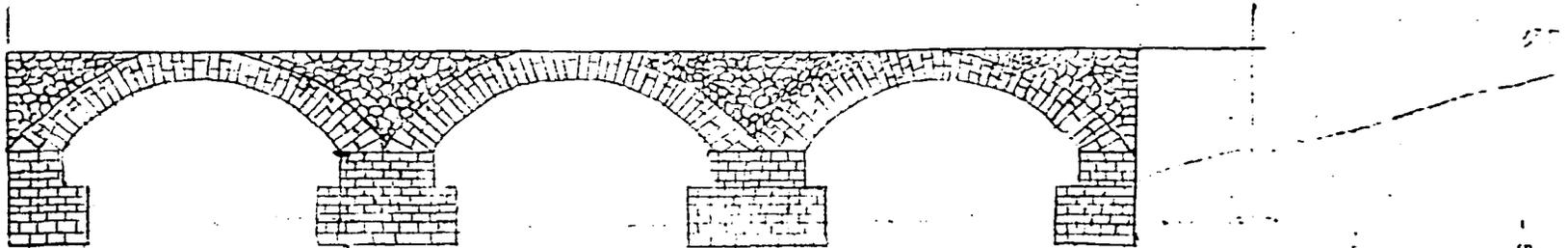


TYPICAL OPEN CULVERT  
CROSS SECTION



MUDHOLI STABILIZATION WITH ROCK

ROCK ARCH BRIDGE



Dimensiones.

Escala de 0,01"

ancho del puente = 7 metros y 6 metros entre basamentos  
 Oblicua de los arcos = 3°  
 altura del nacimiento = 1,50"  
 altura de la clave = 2,55"  
 Radio del intrados = 3,70"  
 Radio del extrados = 5,00"  
 Ancho en el centro = 102° 18'  
 Largo de los muros = 24,50"  
 altura = 2,25"  
 espesor = 0,80"  
 altura de los pies derechos = 0,75"  
 ancho = 2,75"  
 altura de los cimientos = 1,25"  
 ancho = 3,00" y largo = 5,00"  
 oblicua de las paredes = 2,15"  
 largo = 2,50"  
 espesor = 0,80" y 1,00" para sus cimientos  
 altura de estos cimientos = 1,50"  
 altura de los basamentos = 1,00"

Volumen de la mampostería

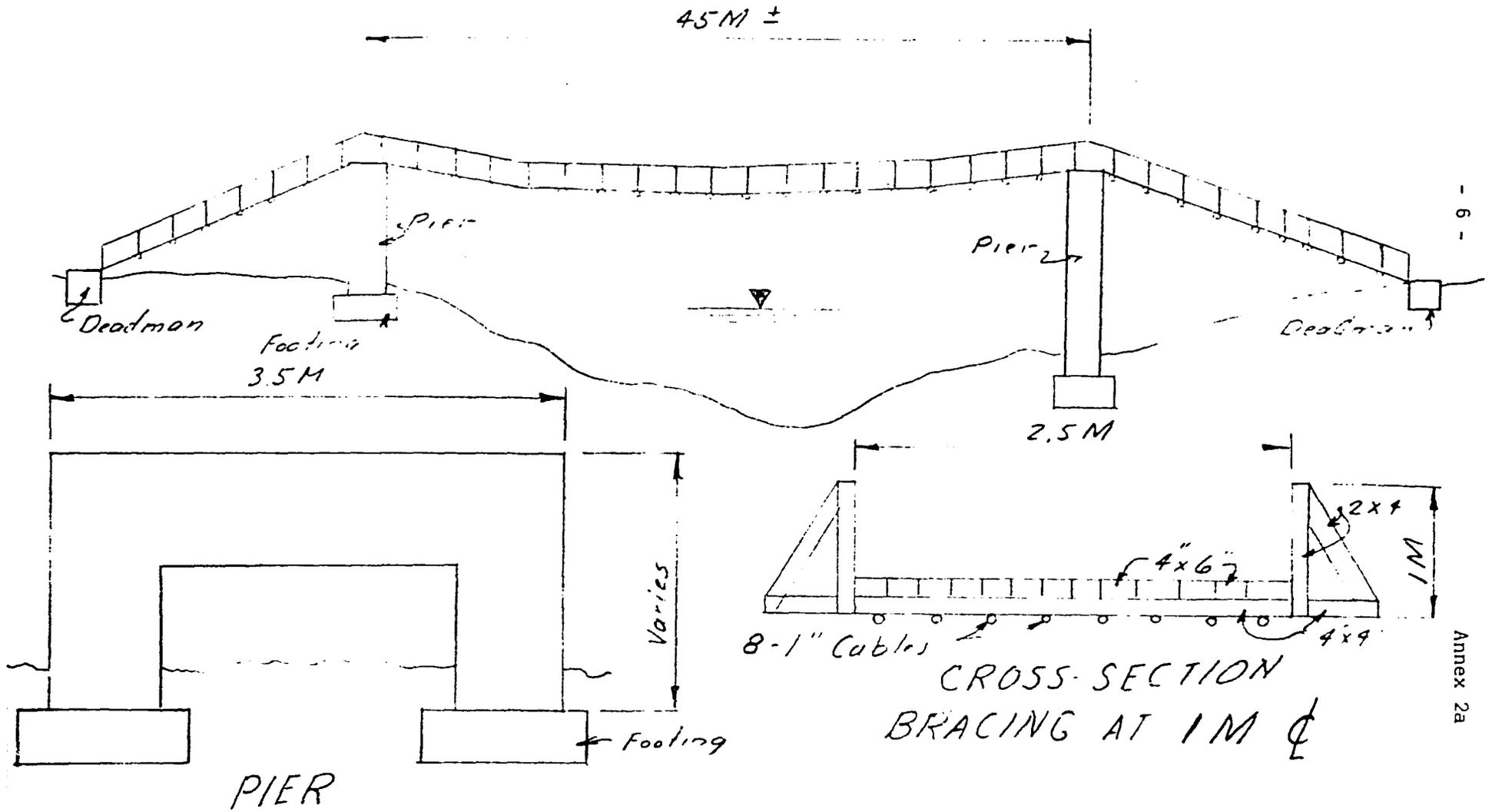
Paredes =	271	metros cubios	055	dens d.
Intrados =	26	"	245	" "
Pies derechos =	43	"	600	" "
Cimientos =	94	"	"	" "
Paredes =	39	"	700	" "
Basamentos =	25	"	075	" "
<b>Total =</b>	<b>499</b>	<b>metros cúb.</b>	<b>675</b>	<b>dens d.</b>

Annex 2a

Encom. 1912

*Henry G. Ranger*

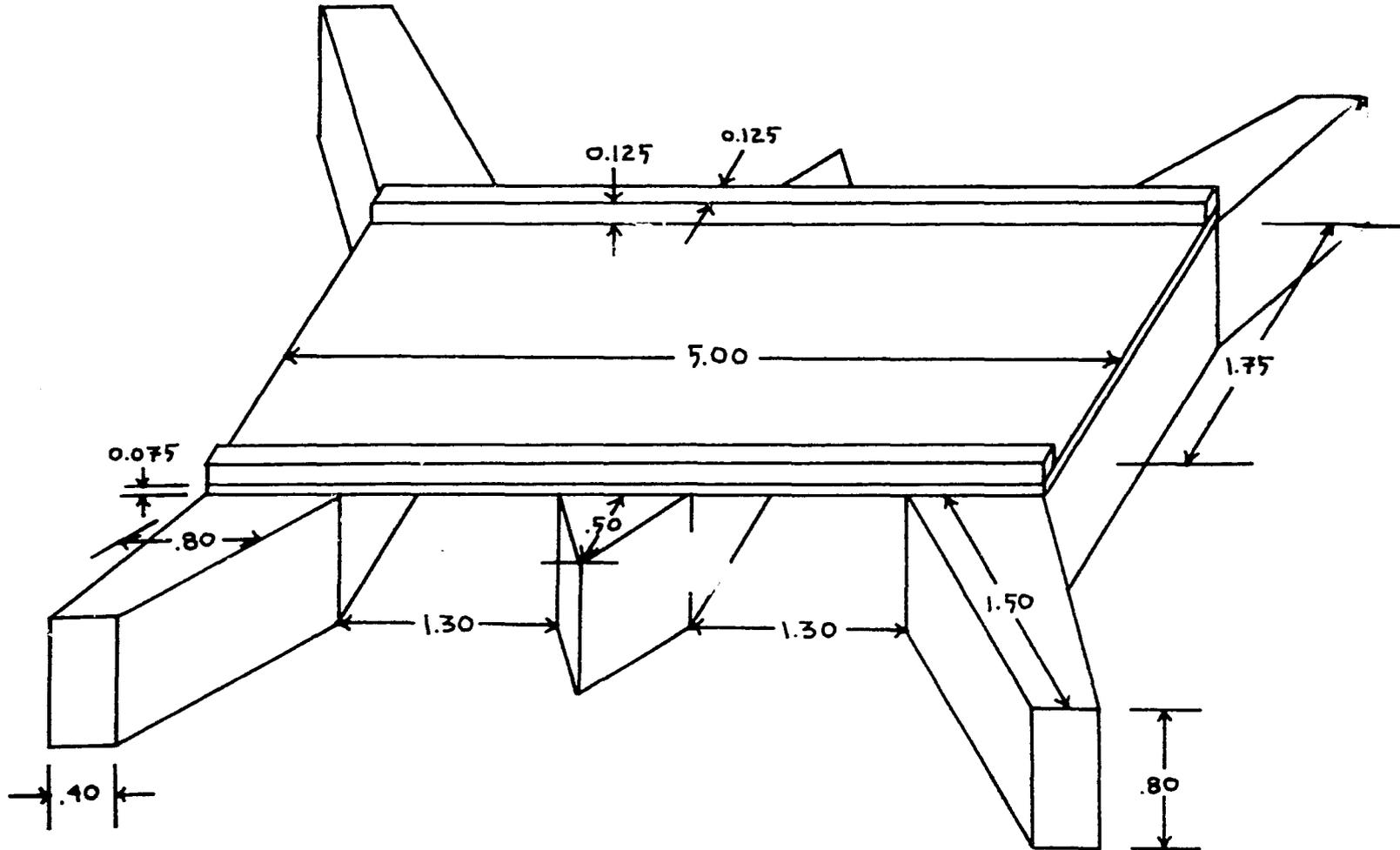
# CABLE SUSPENSION BRIDGE SKETCHES



- 6 -

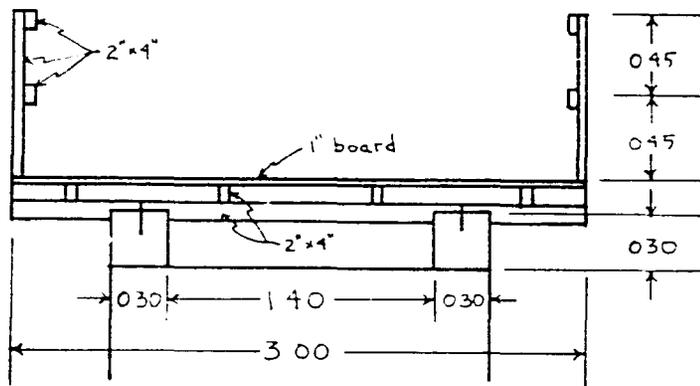
Annex 2a

Ramp at 185 mt.  
(Diagram A)



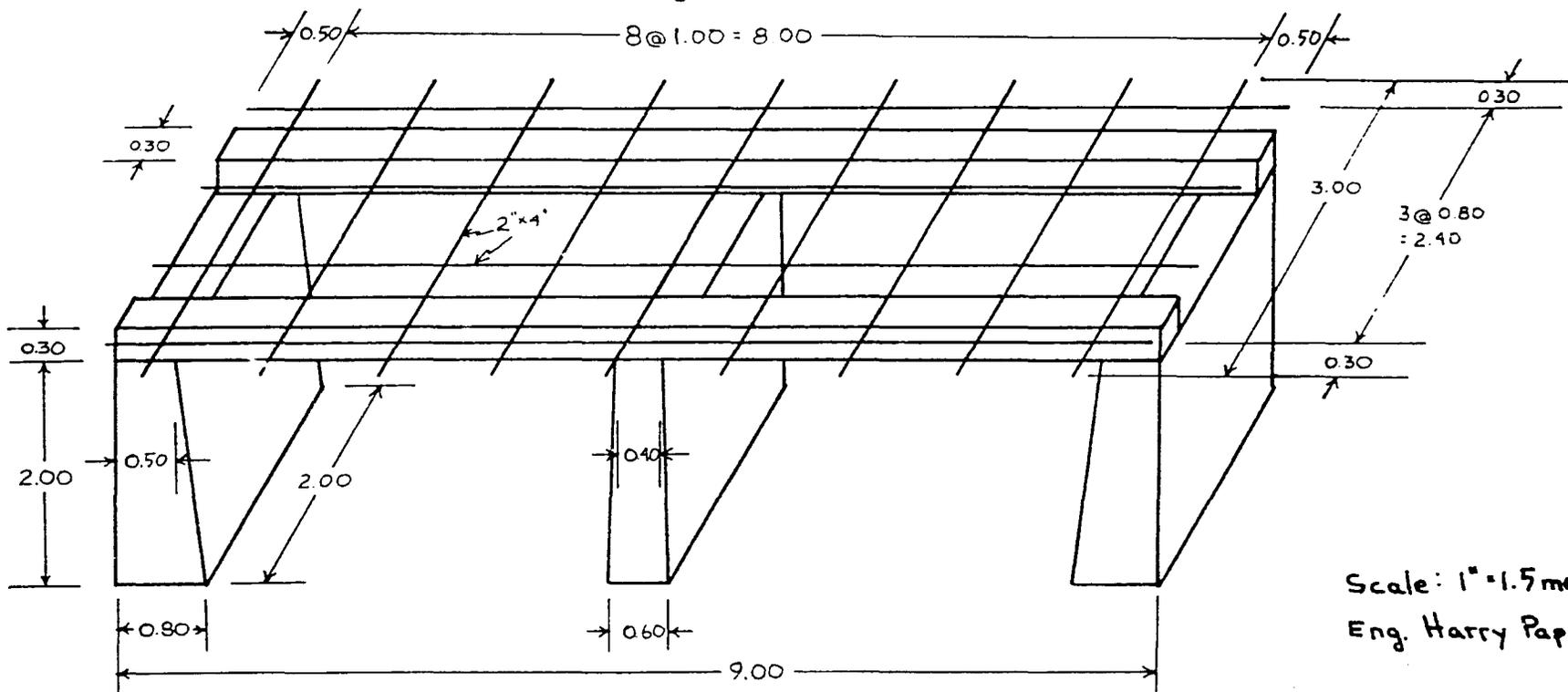
- 7 -

Escala 1" = 1 mt.  
Ing. Harry P.

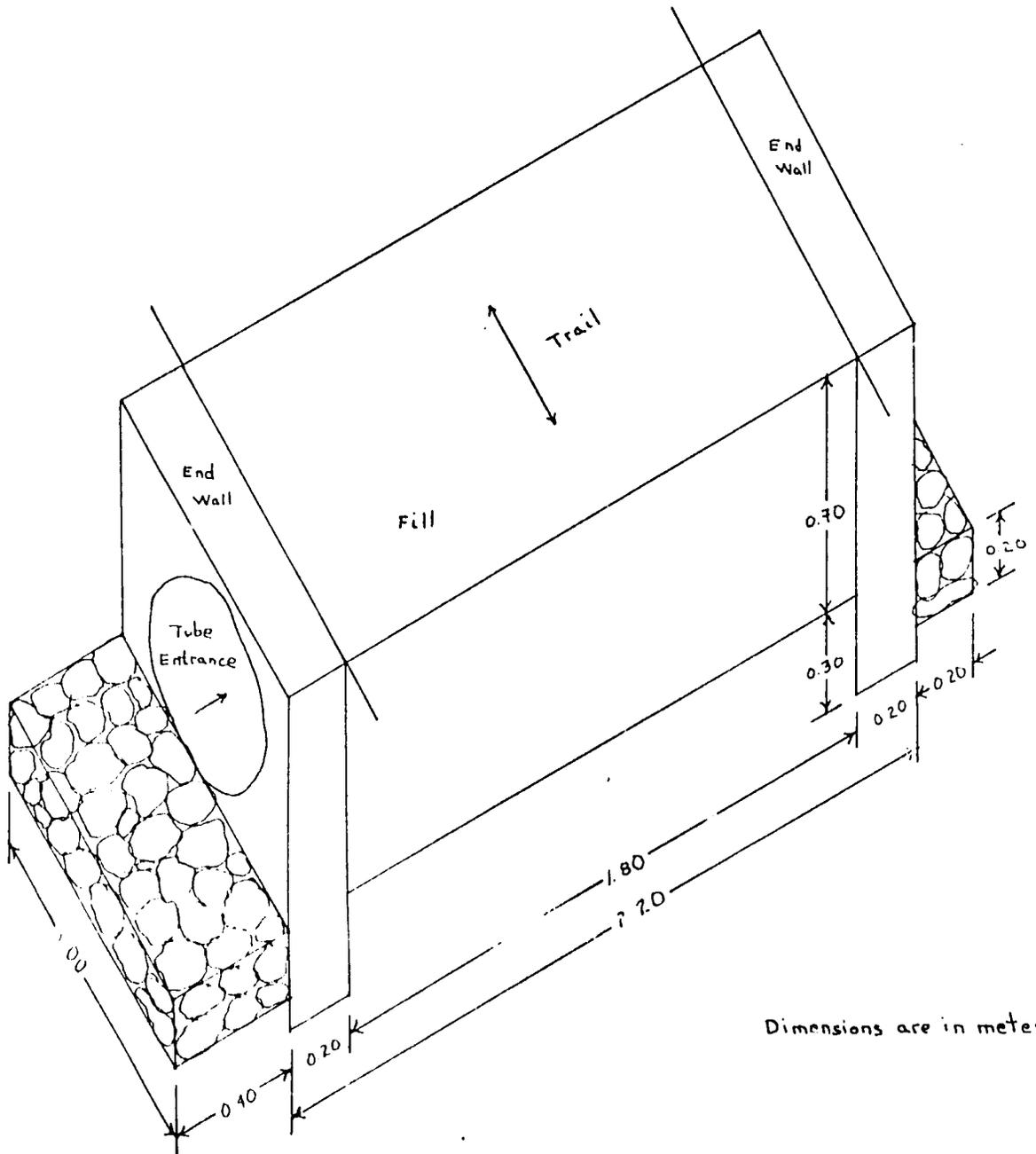


Scale: 1" = 1 meter

Bridge at 896 mt.  
(Diagram B)



Scale: 1" = 1.5 meters  
Eng. Harry Pappo



Errata:

Culverts

PROCEDURE FOR DEVELOPING A  
SIMPLIFIED APPROACH AND BENEFIT/COST ANALYSIS

The use of constant values overtime for the various cost and benefit variables used in Benefit/Cost analysis allows one to express the B/C ratio in a single equational form rather than in the usual columnar format as shown in Table I below. The equational format simplifies the calculation of the B/C ratio for each trail segment analysed thereby reducing the work required during implementation. In addition, it can be performed by personnel less skilled than an economist or financial analyst.

A. Reduction of B/C Analysis to Equational Form

The B/C analysis performed on the Ciliantuque-Monte de la Virgen trail segment provides a good example for explaining the development of the equational format for expressing the B/C ratio. From Table I, the benefits and costs can be expressed in the following manner:

$$(1) \text{ PVB} = dY \sum_{i=1}^{10} \frac{1}{(1.15)^i} + \text{Salvage} \sum_{i=10}^{10} \frac{1}{(1.15)^i}$$

$$\text{PVC} = \text{Const} \sum_{i=1}^1 \frac{1}{(1.15)^i} + (\text{Ad Cost} + \text{Maint. Cost}) \sum_{i=2}^{10} \frac{1}{(1.15)^i}$$

Where:

PVB = Present Value of Benefits

PVC = Present Value of Costs

dY = Change in income for all farm families within in area of influence of entire trail length that are affected by trail improvement (assumed to be 80% of all farm families within area of influence).

TABLE I  
ECONOMIC EVALUATION OF GILIANUQUE-MONTE DE LA VIRGEN PURAL TRAIL  
 (IN U.S.\$)

Year	Trail Construction Cost	Main-tenance Cost	Admin. Maint. Cost	Total Costs	Present Value		Net Ben. (cash flow) col.7-col.4	Present Value		DF 40%	Present Value		
					Costs 15%	Total Benefits		Benefits 15%	40%		DF 45%		
1	43494			43494	.870	37840	.870						
2		68	66	134	.756	116	18372	.756	14016	18372	.510	-31055	.690
3		68	66	134	.659	101	18372	.659	12190	18372	.364	9370	.476
4		68	66	134	.572	88	18372	.572	10597	18372	.260	6687	.328
5		68	66	134	.497	77	18372	.497	9207	18372	.186	4777	.226
6		68	66	134	.432	67	18372	.432	8003	18372	.133	3417	.156
7		68	66	134	.376	58	18372	.376	6966	18372	.095	2444	.108
8		68	66	134	.327	50	18372	.327	6058	18372	.068	1745	.074
9		68	66	134	.284	44	18372	.284	5261	18372	.048	1249	.051
10		68	66	134	.249	38	22926	.247	5663	22772	.035	882	.035
						38479		77951				313	

Economic Internal Rate of Return:  $40 + 5 \times \frac{313}{3064} = 40 \times .5 = 40.5\%$

$B/C = \frac{77,951}{38,479} = 2.03$

- Salvage** = Salvage value of entire trail at end of 10 years
- Const** = Economic construction cost of entire trail segment.  
Its derivation is shown in Table II.
- ad Cost** = Administrative maintenance cost associated with trail.
- Maint. Cost** = Total costs for maintaining entire trail segment.
- $\sum$  = Sum of discount factors over time period indicated.
- $\frac{1}{(1.15)^i}$  = Discount factor for ith year assuming opportunity cost of capital equals 15%
- $\frac{PVB}{PVC}$  = B/C ratio

Applying the values from Table I to equation I gives:

$$(2) \quad PVB = \$18,526 (4.15) + \$4,400 (.247) = \$77,969$$

$$PVC = \$43,494 (.870) + (88+66) (4.15) = 38,479$$

$$\frac{PVB}{PVC} = 2.03 = \text{B/C ratio}$$

Which is precisely the B/C ratio shown in Table I.

#### B. Simplifying the Reduced Form of the B/C Ratio

The present values for salvage, administrative maintenance and maintenance are small and offsetting. Hence, their elimination from the B/C equation does not appreciably affect the results. Eliminating these three variables reduces the B/C equation to the present value of the transport savings benefits in the numerator and the present value of the construction costs in the denominator as shown below:

$$(3) \quad \frac{PVB}{PVC} = \frac{\$18,526 (4.15)}{\$43,494 (.870)} = \frac{\$76,883}{\$37,840} = 2.03$$

Which is exactly the same value as in equation 2.

TABLE II

ECONOMIC COST OF REPRESENTATIVE TRAIL SECTION

COST ITEM	Total Input Cost of Trail <u>1/</u>		Total	Financial Cost of Trail <u>2/</u>	Economic Cost of Trail <u>3/</u>
	AID or GCH	Donated			
<b>Materials</b>					
Trail Construction	\$ 12,226	\$ 10,030	\$ 22,256	\$ 12,226	\$ 12,226
Bridge Construction	7,139	585	7,724	7,139	7,139
<b>Labor</b>					
Unskilled	17,855		17,855	17,855	8,928
Skilled	707		707	707	707
General Supervision	1,520		1,520	1,520	1,520
Group Leaders	2,708		2,708	2,708	2,708
<b>Food for Work</b>		19,912	19,912	---	---
<b>Engineering</b>	2,550		2,550	2,550	2,550
Back-up <u>4/</u>	1,518		1,518	308	308
Tool Cost	1,925		1,925	1,925	1,925
Social Security	748		748	748	---
General Administrative <u>5/</u>	5,522		5,522	4,378	4,378
Trail Selection	1,100		1,100	1,100	1,100
<b>TOTAL COST</b>			<u>\$ 86,045</u>	<u>\$ 52,164</u>	<u>\$ 43,489</u>
Cost per km. <u>6/</u>			3,911	2,417	1,977

- 1/ Includes value attributable to each input, whether it is purchased with grant funds, provided by GCH, or donated.
- 2/ Excludes those costs that are donated since they do not become cost to project or economy. The first two items are community donated gravel and rock. The cost of warehousing and transporting food-for-work is included under General Administrative costs.
- 3/ Differs from Financial Cost by the shadow pricing of unskilled labor at 50%, and the exclusion of the Social Security transfer payment.
- 4/ Back up costs include a contingency fee for right of way purchase. None was necessary for the trail hence it was omitted from Financial and Economic Cost columns.
- 5/ The financial and economic costs are reduced by the salvage value of the trucks purchased under the project whose purchase cost is included in this cost category.
- 6/ Trail length: 22 km.

$$45 \text{ fams/km} \times \$18.79/\text{fam} \times 22 \text{ kms} = \$18,602$$

which is slightly higher than the \$18,526 figure used in Table I due to rounding the number of families to 45/km.

Dividing the total construction cost by 22 kms gives an average of \$1977/km. The total costs can then be expressed as:

$$\$1977/\text{km} \times 22 \text{ kms} = \$43,494$$

The simplified B/C ratio can thus be expressed on a per kilometer basis in the following manner:

$$(6) \quad \frac{\text{PVB/km} \times 22 \text{ km}}{\text{PVC/km} \times 22 \text{ km}} = \frac{22 \text{ km} (45 \text{ fams/km} \times \$18.79/\text{fam}) (4.15)}{22 \text{ km} (\$1977/\text{km}) (.870)}$$

The 22 km factor can be eliminated from both numerator and denominator without changing the B/C ratio.

$$(7) \quad \frac{\text{PVB/km}}{\text{PVC/km}} = \frac{45 \text{ fams/km} \times \$18.79/\text{fam} (4.15)}{\$1977/\text{km} (.870)}$$

$$= 2.04$$

Which is within one-one-hundredth of the actual 2.03 calculated in equation due to rounding error.

In more general terms, the B/C ratio (assuming opportunity cost of capital is 15%) can be expressed as<sup>1/</sup> :

<sup>1/</sup> Different opportunity costs of capital assumptions will give different values for the figures in parentheses. Equation 8 could be more generally stated as:

$$\frac{\text{PVB/km}}{\text{PVC/Km}} = \frac{\text{Fams/Km} \times \text{dY/fam} (\text{discount factor})}{\text{Const/Km.} (\text{discount factor})}$$

$$(8) \quad \frac{PVB/km}{PVC/Km} = \frac{Fams/km \times dY/fam}{Const/km} \quad (4.15) \quad (.870)$$

Where:

PVB/km = Present value of Benefits/km

PVC/km = Present value of Costs/km

Fams/km = Number of farm families/km assumed to be affected by trail improvement (80% of total farm families within trail's area of influence).

dY/Fam = Average change in income per farm family due to trail improvement.

Const/km = Economic construction Cost/km

(4.15), (.870) = Sum of discount factors at opportunity cost of capital of 15%

Equation 8 is the general equation used in the project for estimating B/C ratios.

Summary and Critique of GOH Rural Road Prioritization Approach  
Developed Under World Bank Contract with German Firm - GITEC

In the first questionnaire there are 27 indicators that each receive a value ranging from 1-5 (some start as low as .5). (The 2nd revised questionnaire has a slightly higher number of indicators - though its exact number isn't clear).

The 27 indicators are broken into three groups for weighing the values received in the evaluation:

The first group contains 13 of the 27 indicators and receives no additional weighting, i.e. a weight equal to 1 for each indicator in this group. For the most part they are non-economic indicators.

The second group is composed of the remaining 14 indicators and are those that the various government agencies weighted. GITEC established a total of 72 weighting points for these 14 indicators. In order to give the government agencies a proper voice in the weighting, but not too much, it was decided that the government agencies could only apportion 30 points over 11 indicators and 24 points over the remaining 3 indicators with a maximum set for each indicator. These 54 points represent 75% of the total 72 potential points which GITEC and IBRD felt was the proper influence for the political groups. The group of 3 indicators with 24 total points to be decided are: total area; area cultivated; and number of inhabitants with 5, 11, and 16 maximum points, respectively. The 11 other indicators have maximum points in the 3-4 point range. GITEC clearly has designated these economic factors as most important.

The third group consists of 7 indicators which are a subset of the second group and were weighted by GITEC only. For the most part they are economic indicators with the maximum possible points for 2 being 8, for 4 being 3, and 1 being 5. There is thus a tendency to weight the economic indicators highly for the entire group of indicators. GITEC estimates that about 2/3 of the points result from economic indicators and the remaining 1/3 from social indicators.

Pre-Selection Screening

A. Solicitude for a specific road will be rejected if:

- (1) There are other good transport alternatives
- (2) Plans already exist for the construction of alternative roads that can be used.
- (3) The road itself is deemed in good condition.
- (4) The solicited road will serve only a few people.
- (5) The people to be served by the road are not disposed to help in its construction or maintenance.

- (7) Local authorities aren't disposed to help.
- (8) The solicitude was deficient or in error.

It is not clear how much manpower is needed to do this screening process. Apparently a trip has to be made to the site. Maps can be used especially for point 4 and possibly for points 1 and 2. Nevertheless, a trip would have to be made for each solicitude that passed the first 4 points in Tegucigalpa.

#### Valvation System

Presumably a second trip is made, or during the first one, if points 1-8 do not deselect the road, the engineering estimates are made and the questionnaire is filled out. Necessary census data is then collected in Tegucigalpa. From this information, the total points for the road are compiled. The same procedure is followed for all roads with the ranking done by the absolute number of points received. Type of economic data collected in questionnaire.

1. Total area of influence
2. Area cultivated
3. Additional lands for potential ag. production
4. Agricultural goods exported
5. Population
6. Land tenancy

In the questionnaire, no absolute values of production are obtained.

An excellent example of the questionable weighting system is the following: cultivated area can receive a maximum of almost 80 points and the area of influence 45 points, while cultivable area can receive a maximum of only 5 points.

#### Problems with GOH Approach

1. The initial valuation of giving points for each indicator (1-5) by the interviewer is somewhat subjective.
2. The weighting system seems highly subjective.
3. The evaluation process assumes that the benefits accruing from any type of road improvement (little, major, new construction) will be the same. Three of the most important indicators (in terms of points): (a) area of influence/km. of road cost; (b) area cultivated/km. of road cost; and (c) number of inhabitants/km. of road cost in fact bias the results toward roads that are less costly. To overcome this obvious shortcoming that really destroys the validity of their whole procedure, they have decided that monies should be divided, apparently equally,

between three types of road improvement: (a) that which requires little improvement; (b) that which requires substantial improvement; and (c) that which requires new construction. Since they make no claim as to B/C values of any road segment in any of the three above categories, they are satisfied with their approach. If one were concerned about meeting at least a minimum B/C=1 ratio, however, one ought to be concerned especially for category a. For the other two categories one might reason that significant change is being made in the road which should lead to substantial change in transport mode used, lands cultivated, technologies used, etc., that will assure a B/C greater than 1 per any road segment.

Because of this shortcoming alone, it is not recommended that this evaluative approach (at least not by itself) be used for prioritizing roads in a project that anticipates being involved with the three construction categories mentioned above.

For the Rural Trails Project, however, the GOH approach, even with the problems cited in paras 1 and 2 above, could be used to prioritize road segments since only new construction will be performed which implies that the resultant benefits should be of the same type and magnitude for the average farmer.

- 2 -

are given in Table I.

Table I

Transport Costs/Ton/Km by Transport Mode\*

<u>Transportation Mode</u>	<u>Cost/Ton/km</u>
Headload	\$6.50
Mule	\$2.30
Oxcart	\$ .90
Pick up(short haul)	\$ .50
Truck (long haul on Main Road)	\$ .10

\*Source: Rural Reconstruction II, Project Paper, p.81.

Actual mule charges for various points along this particular trail are given in table II as well as projected pickup truck charges for the post construction jeep trail.

Table II

Actual Mule and Estimated Pickup Transportation Costs on Ciliantuque Monte de la Virgen Trail from Village to Paved Road

<u>Location</u>	<u>Distance from Paved Road</u>	<u>Mule Cost per Carga 1/</u>	<u>Cost/ton Mule 2/</u>	<u>Cost/ton Pickup 3/</u>
San Ramón	9 kms.	\$ 3.00	\$30	\$5.58
Mercedes	14.7 kms.	\$ 3.50	\$35	\$9.11
Monte de la Virgen	16.7 kms.	\$ 5.00	\$50	\$10.35

1/ 1 carga = 200 lbs.

2/ Note that the weighted, average cost of mule transport/ton/km (\$2.85) is 23% higher than national average given in Table I,

3/ Calculated at a figure 23% higher than national average given in Table I to avoid an upward bias in transport savings.

The weighted, average cost of mule transport/ton/km is calculated 1/ to be \$2.85. The average cost per ton/km by pickup is assumed to be \$.62. Therefore the average transport savings per ton/km is estimated to be \$2.23 over the newly constructed jeep trail.

By using these projected transport savings and by making a few assumptions, the total yearly benefits derived from the newly constructed jeep trails can be calculated. To make our estimate conservative, only coffee production is considered and only 80% of yearly coffee production (1,200 tons) is calculated to be transported by the cheaper mode. We also assume that all production is transported from a village (San Ramón) slightly less than half way up the trail (9 kms.) to simplify the calculation. Total yearly benefits are \$24,084, calculated as follows:

Total Yearly  
Benefits = Average cost savings per ton/km (\$2.23) x 8 kms x  
1200 tons

c. Costs-Ciliantique to Monte de la Virgen

Table III provides a summary of the projected construction costs for the 22 kilometers of trail. These costs are the same as those presented in the Cost Section of the Technical Analysis except for the addition of a new column representing economic costs.

The total economic cost/km of trails construction is estimated to be \$1,977.

After construction is completed, there will be additional maintenance costs over the 10 year expected life of the trail. Tool replacement is calculated to be \$20 per 5 km. section or per year. For this example, the yearly cost becomes \$4/km x 22 kms or \$88. The cost of a promoter/inspector, who will periodically visit the various villages to provide a stimulus to keep the trails properly maintained, and to provide technical suggestions where necessary, will be \$3/km per year. For this example, the yearly cost is \$66. No cost is included for maintenance work done by voluntary community labor.

d. Benefit Cost Calculation for Ciliantique - Monte de la Virgen Trail

Using the figure of \$43,494 (\$1,977/km x 22 kms) for the total trail construction cost, \$88/year in Maintenance costs, \$66/ year in Administrative Maintenance costs, yearly benefits (transport savings) of \$24,084, a salvage value of the road of \$200/km after ten years

<u>1/</u>	9 x \$3.33 =	30	
	14.7 x \$2.38 =	35	
	16.7 x \$2.99 =	50	
	40.4 kms	\$115	\$115 + 40.4 = \$2.85

Table III

## ECONOMIC COST OF REPRESENTATIVE TRAIL SECTION

COST ITEM	AID or GOH	Total Input Cost of Trail Donated	1/ Total	Financial Cost of Trail 2/	Economic Cost of Trail 3/
Materials					
Trail Construction	\$ 12,226	\$ 10,030	\$ 22,256	\$ 12,226	\$ 12,226
Bridge Construction	7,139	585	7,724	7,139	7,139
Labor					
Unskilled	17,855		17,855	17,855	8,928
Skilled	707		707	707	707
General Supe. vision	1,520		1,520	1,520	1,520
Group Leaders	2,708		2,708	2,708	2,708
Food-for-Work		19,912	19,912	---	---
Engineering	2,550		2,550	2,550	2,550
Back-up	1,518		1,518	308	308
Tool Cost	1,925		1,925	1,925	1,925
Social Security	748		748	748	---
General Administrative	5,522		5,522	4,378	4,378
Trail Selection	1,100		1,100	1,100	1,100
TOTAL COST			<u>\$ 86,045</u>	<u>\$ 53,164</u>	<u>\$ 43,489</u>
Cost per km. 4/			3,911	2,417	1,977

1/ Includes value attributable to each input, whether it is purchased with grant funds, provided by GOH, or donated.

2/ Excludes those costs that will be donated during the project and which are expected to continue to be donated after this project is completed, i.e. community materials and food-for-work.

3/ Economic costs differ from total inputs costs in the following ways:

- a. The imputed value of Food-for-Work is excluded since under the time horizon of this project and even a follow-on project (a total of 5 to 6 years), Food-for-Work supplies are expected to be plentiful. The administrative cost of distributing the donated food is, of course, included.
- b. The imputed value of the materials (gravel and rock) donated by local communities is excluded since their opportunity cost is valued at zero. The cost of excavating and transporting the materials is included.
- c. Unskilled labor is shadow priced at 25 percent of the minimum wage for construction work (\$2.00 day) or 50 percent of the \$1.00 cash payment in the project.
- d. The contingency costs, e.g. the purchase of right-of-way, which are not expected to be incurred are excluded from the Back-up line item.
- e. Social Security costs are excluded as they represent transfer payments.
- f. The General Administrative costs are reduced by the salvage value of the trucks purchased under the project whose entire purchase cost is included in this cost category.
- g. The A.I.D. grant, while not an economic cost to Honduras, is included since the continuation of the activities funded by the grant beyond the life of the project will require the use of external loan or GOH financing.

4/ Trail length: 22 km.

of use, and a figure for the opportunity cost of capital of 15%, Table IV shows the project to have an internal rate of return of 46% or just over 3 times the opportunity cost of capital in Honduras. In terms of a benefit/cost ratio, the value is 2.6.

Table IV

ECONOMIC EVALUATION OF CILIAN TUQUE - MONTE DE LA VIRGEN TRAIL

(In U.S.\$)

Year	Trail Construction Cost	Maintenance Cost	Admin. Maint. Cost	Total Costs	DF 15%	Present Value Costs 15%	Total Benefits	DF 15%	Present Value Benefits 15%	Net Ben. (cash flow) col.7-col.4	DF 45%	Present Value 45%	DF 50%	Present Value 50%
1	43494			43494	.870	37840		.870		-43494	.690	-30011	.667	-29010
2		88	66	154	.756	116	24,084	.756	18,208	23930	.476	11391	.444	10625
3		88	66	154	.658	101	24,084	.658	15,847	23930	.328	7849	.296	3145
4		88	66	154	.572	88	24,084	.572	13,776	23930	.226	5408	.198	2104
5		88	66	154	.497	77	24,084	.497	11,970	23930	.156	3733	.132	1402
6		88	66	154	.432	67	24,084	.432	10,404	23930	.108	2584	.088	935
7		88	66	154	.376	58	24,084	.376	9,056	23930	.074	1771	.059	627
8		88	66	154	.327	50	24,084	.327	7,875	23930	.051	1220	.039	414
9		88	66	154	.284	44	24,084	.284	6,840	23930	.035	838	.026	276
10		88	66	154	.249	38	28,484	.247	7,036	28330	.024	680	.017	482
						<u>38479</u>			<u>101,012</u>			<u>5463</u>		<u>-9000</u>

Economic Internal Rate of Return:  $45 + 5 \frac{(5463)}{(14463)} = 46.8\%$

$B/C = \frac{101,012}{38,479} = 2.62$

REPUBLICA DE HONDURAS  
MINISTERIO DE COMUNICACIONES, OBRAS PUBLICAS Y TRANSPORTE  
DIRECCION GENERAL DE CAMINOS

I N F O R M E  
EVALUACION DE PRIORIDADES  
PARA LA  
CONSTRUCCION DE CAMINOS RURALES

Río Ulúa - La Estancia  
San Francisco de Ojuera - El Pílon  
San Pedro de Zacapa - Azacualpa  
El Tablón - Agua Caliente  
San Miguelito - Dolores

Preparado por : Lic. Reinaldo Romero, SECOPT  
Ing. Sergio Canales, SECOPT  
Colaboración: Grupo Asesor Caminos por Mano  
de Obra.

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Tegucigalpa, D.C.

Enero de 1978

## 1. Generalidades

### 1.1 Introducción

En el mes de diciembre del año de 1977, se visitaron los Municipios de San Francisco de Ojuera y San Pedro de Zacapa en el Departamento de Santa Bárbara y el Municipio de Dolores en el Departamento de Intibucá; se visitaron estos proyectos debido a previas solicitudes presentadas por las municipalidades.

La gira realizada a estos municipios fue con el propósito de recabar la suficiente información para realizar varios estudios de factibilidad socio-económica. Así mismo realizar un análisis de la posibilidad de construir un camino de acceso por mano de obra en estas zonas.

Las rutas recorridas en estos municipios se hizo en compañía de los señores Alcaldes Municipales y el Gobernador Político del Departamento de Intibucá.

### 1.2 La Encuesta

Para obtener la información suficiente para hacer la evaluación de los proyectos de caminos vecinales solicitados, se ha utilizado el cuestionario elaborado por el Proyecto Asesoría, Estudio y Construcción Caminos por Mano de Obra.

El cuestionario consiste de 4 partes: "El Camino", "Información Técnica", "Información Cuantitativa " e "Información Cualitativa".

La encuesta se efectúa en el lugar con las personas más competentes como ser Alcaldes Municipales, Secretarios, Profesores, Presidentes de Patronato y también con campesinos que conocen bien estas zonas; la encuesta se hizo a lo largo del camino y cubre también las aldeas retiradas que se encuentran en el área de influencia del camino.

Con la visita realizada a estos caminos se pudo constatar el inicio, final y ruta solicitada. Así mismo obtener datos suficientes de producción agrícola y otros.

### 1.3 Beneficios Sociales

Los efectos de los Proyectos no serán únicamente los cuantificados por reducción en los costos de transporte, sino que también los efectos sociales derivados de una mayor actividad económica particularmente agrícola en la zona de influencia directa. Los proyectos vecinales al ser construidos con uso intensivo de mano de obra local tienen doble impacto al desarrollo de un área. A saber;

- a) El impacto directo de la creación de empleo y así el incremento del poder de compra de la población lo que quiere decir mayor circulación de dinero.
- b) El impacto indirecto de la previsión de un mejor acceso a mercados y servicios sociales en general el objeto primordial es beneficiar al campesino con su familia.

1.4

Evaluación

Como resultado del proceso de evaluación de los proyectos solicitados para ser construidos con uso intensivo por mano de obra, se utilizó los componentes descritos en los cuestionarios de las Encuestas que se adjuntan y el proceso de computación de variables recomendadas por US AID.

A continuación se detalla la Ecuación usada y sus diversas variables:

Ecuación:

$$B/C = \frac{\text{Familias (dy) } 4.15}{(\text{Costo de construcción}) .870}$$

B = Beneficio

C = Costo

Familias= Número promedio de familias dentro del área de influencia de un kilómetro lineal

870 = Factor de descuento en construcción por kilómetro

dy = Cambio promedio de ingresos por familia debido al mejoramiento del camino

= Ahorro en el transporte por familia

$$= \frac{dt \text{ (ton) Km}}{\text{No. de Familias}}$$

dt = Cambio promedio del costo de transporte por tonelada y kilómetro

= tm - tn

tm = Costo de transporte/Km/ton en mula

tn = Tarifa nacional establecida

ton = Monto de toneladas de producción del área de influencia

Km = Distancia media de transporte

Costo de constr. = Costo total por kilómetro

4.15 = Suma de factores de descuento de los años de 2 a 10

**2. Proyectos**

**2.1 Río Ulúa - La Estancia**

**2.1.1 Recorrido**

El cuestionario de referencia, que se adjunta, muestra un detalle del recorrido realizado desde el Río Ulúa hasta La Estancia, en el Departamento de Santa Bárbara, el camino recorrido tienen una longitud de 12.0 kilómetros lineales hasta llegar a La Estancia; la ruta del camino fue confirmada en el Mapa No. 2560 II y comprende las aldeas que se encuentran a lo largo del camino son San Francisco de Ojuera, Malguaca, El Diviso, El Gavilán, Santa Fé y La Estancia, aldeas retiradas que usan el camino a dos kilómetros por cada lado de la línea de influencia se encuentran Agua Escondida, San Ramón, La Palca y Buenos Aires.

Descripción	Censo de 1974		
	No. de Fam.	No. de Habit.	Promedio por Fam.
San Francisco de Ojuera	393	1,783	
El Diviso	22	127	
Malguaca	11	64	
El Gavilán	20	95	
Santa Fé	138	709	
La Estancia	7	41	
Agua Escondida	1	7	
San Ramón	84	428	
La Palca	49	293	
Buenos Aires	5	6	
<b>Totales</b>	<b>730</b>	<b>3,553</b>	<b>5</b>

**2.1.2 Datos Obtenidos**

Longitud del camino en kilómetros	12.0
Número de familias dentro del área de influencia del camino	730
Número de habitantes dentro del área de influencia del camino	3,553
Costo de construcción estimado por kilómetro	L.5,000.00
Costo de construcción total	L.60,000.00
Area cultivada en manzanas	400
Producción estimada en toneladas	532
Costo de transporte por carga y kilómetro mediante mula	L.0.50
Costo de transporte por tonelada y kilómetro mediante mula	L.5.00
Distancia media de transporte 12/2 Kms	6,000

**2.1.3**      Computación de las Variables

**dt**        = 5.00 - 1.00 = L.4.00

**dy**        =  $\frac{4.00 \times 532 \times 6}{730}$

             = 17.49

**B/C**       =  $\frac{61 \times 17.49 \times 4.15}{5,000 \times .870}$

             = 1.02

**2.2**        San Francisco de Ojuera - El Pílon

**2.2.1**      El Recorrido

El cuestionario de referencia, que se adjunta, muestra un detalle de recorrido realizado desde San Francisco de Ojuera a El Pílon en el Departamento de Santa Bárbara. El camino recorrido tiene una longitud de 4 kilómetros lineales y la ruta del camino fue confirmada en el Mapa No. 2560 II adjunto.

En esta ruta no se encuentran aldeas ni caseríos cercanos a lo largo del camino y solo cuenta con 16 viviendas y 101 habitantes; los principales cultivos en esta zona son café, maíz y otros.

La tenencia de la tierra se encuentra en manos de pocos y sólo una sola persona posee más de 600 manzanas de las cuales sólo tiene cultivadas aproximadamente un 45%, las demás personas existentes sólo poseen de 1/2 manzana a 3 manzanas.

**2.2.2**      Datos Obtenidos

Longitud del camino en Kms.	4.0
Número de familias dentro del área de influencia del camino	16
Número de habitantes dentro del área de influencia del camino	101
Costo de construcción estimado por kilómetro en	L.5,000.00
Costo de construcción total en	L.20,000.00
Area cultivada en manzanas	130
Producción estimada en toneladas	38
Costo de transporte por carga y kilómetro mediante mula en	L.1.00
Costo de transporte por tonelada y kilómetro mediante mula en	L.10.00
Distancia media de transporte 4/2 Kms	2,000

2.2.3 Computación de las Variables

$$dt = 10.00 - 1.00 = 9.00$$

$$dy = \frac{9.00 \times 38 \times 2}{16}$$

$$= 42.75$$

$$B/C = \frac{4 \times 42.75 \times 4.15}{5,000 \times .870}$$

$$= 0.16$$

2.3 San Pedro Zacapa a Azacualpa

2.3.1 Recorrido

El cuestionario de referencia que se adjunta, muestra un detalle del recorrido realizado desde el Municipio de San Pedro de Zacapa hasta el Municipio de Azacualpa en el Departamento de Santa Bárbara, el camino en mención tiene una longitud de 10 Kms. lineales y las aldeas que se encuentran a lo largo del camino son Ojo de Agua, El Tablón y El Ocotal, aldeas retiradas que usan el camino de influencia se encuentran El Quebracho, Canculuncos, Las Tablas, El Barquito y El Zapote que están a dos kilómetros por cada lado de la línea de influencia.

La ruta del camino recorrido fue confirmada en el Mapa No. 2500 II adjunto.

Descripción	Censo de 1974		
	No. de Fam.	No. de Habit.	Promedio por Fam
Ojo de Agua	7	28	
El Tablón	15	124	
El Ocotal	3	41	
El Quebracho	5	28	
Canculuncos	44	257	
Las Tablas	2	10	
El Zapote	19	129	
El Barquito	20	100	
Azacualpa	154	851	
Totales	272	1,608	6

2.3.2 Datos Obtenidos

Longitud del camino en kilómetros	10.0
Número de familias dentro del área de influencia del camino	272
Número de habitantes dentro del área de influencia del camino	1,608

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<b>Costo de construcción estimado por kilómetro en</b>	<b>L. 5,000.00</b>
<b>Costo de construcción total en</b>	<b>L. 50,000.00</b>
<b>Area cultivada en manzanas</b>	<b>1,200</b>
<b>Producción estimada en toneladas</b>	<b>2,180</b>
<b>Costo de transporte por carga y kilómetro mediante mula</b>	<b>L.0.20</b>
<b>Costo de transporte por tonelada y kilómetro mediante mula</b>	<b>L.2.00</b>
<b>Distancia media de transporte 10/2 Kms</b>	<b>5,000</b>

**2.3.3 Computación de las Variables**

$$dt = 2.00 - 1.00 = L.1.00$$

$$dy = \frac{1.00 \times 2,180 \times 5}{272}$$

$$= 40.07$$

$$B/C = \frac{27.2 \times 40.07 \times 4.15}{5,000 \times .870}$$

$$= 1.03$$

**2.4 De El Tablón a Agua Caliente**

**2.4.1 Recorrido**

El cuestionario de referencia, que se adjunta muestra un detalle del recorrido realizado desde El Tablón hasta Agua Caliente en el Municipio de San Pedro de Zacapa en el Departamento de Santa Bárbara, el camino recorrido tiene una longitud de 5 kilómetros lineales hasta llegar al Río Ulúa, donde es necesario la construcción de un puente, la longitud estimada en el cruce de este río es de 250 metros, y las aldeas que se encuentran a lo largo del camino son El Tablón y Vega Vieja, aldeas retiradas que usan el camino a dos kilómetros por cada lado de la línea de influencia se encuentran Canculuncos, La Venada, Fuentes Termales, Plan de Encina y El Salitre.

La ruta del camino recorrido fue confirmada en el Mapa No. 2560 II adjunto.

Descripción	Censo de 1974		
	No. de Fam.	No. de Habit.	Promedio por Fam
El Tablón	15	124	
Vega Vieja	3	18	
Canculuncos	44	257	
La Venada	20	120	
Agua Caliente	83	475	
El Encinal	7	40	
El Salitre	10	48	
<b>Totales</b>	<b>182</b>	<b>1,082</b>	<b>6</b>

**2.4.2**      Datos Obtenidos

Longitud del camino en kilómetros	5,000
Número de familias dentro del área de influencia del camino	182
Número de habitantes dentro del área de influencia del camino	1,082
Costo de construcción estimado por kilómetro en	L. 5,000.00
Costo de construcción total en	L.25,000.00
Area cultivada en manzanas	800
Producción estimada en toneladas	1,200
Costo de transporte por carga y kilómetro mediante mula en	L.0.25
Costo de transporte por tonelada y kilómetro mediante mula en	L.2.50
Distancia media de transporte 5/2 Kms	2,500

**2.4.3**      Computación de las Variables

$$dt = 2.50 - 1.00 = L.1.50$$

$$dy = \frac{1.50 \times 1,200 \times 2.5}{182}$$

$$= 24.72$$

$$B/C = \frac{36.4 \times 24.72 \times 4.15}{5,000 \times .870}$$

$$= 0.86$$

**2.5**      San Miguelito a Dolores

**2.5.1**      Recorrido

El cuestionario de referencia que se adjunta muestra un detalle del recorrido realizado desde el Municipio de San Miguelito hasta el Municipio de Dolores en el Departamento de Intibucá; el camino tiene una longitud de 12.0 kilómetros lineales.

La ruta del camino fue confirmada en el Mapa No. 2560 II adjunto. Las aldeas y caseríos que se encuentran a lo largo del camino son: La Misión, El Derrumbe y La Ceiba; aldeas retiradas que usan el camino a dos kilómetros por cada lado de la línea de influencia se encuentran: Toca, Taucerique, El Borbolión y Lalguna Grande. En este recorrido pudimos observar que se encuentra un buen número de pinos y pinabetos contando más de 400 árboles a una distancia de 30 metros por cada lado de nuestro recorrido.

Descripción	Censo de 1974		
	No. de Fam.	No. de Habit.	Promedio por Fam.
Dolores	95	349	
El Rodeo	12	62	
Toco	11	59	
El Borbollón	10	61	
Taucerique	4	14	
La Ceiba	11	53	
El Derrumbe	7	38	
Laguna Grande	16	77	
La Misión	20	69	
<b>Totales</b>	<b>186</b>	<b>782</b>	<b>4</b>

2.5.2 Datos Obtenidos

Longitud del camino en kilómetros	12.0
Número de familias dentro del área de influencia del camino	186
Número de habitantes dentro del área de influencia del camino	782
Costo de construcción estimado por kilómetro en	L. 5,000.00
Costo de construcción total en	L. 60,000.00
Area cultivada en manzanas	450
Producción estimada en toneladas	602
Costo de transporte por carga y kilómetro mediante mula en	L. 0.30
Costo de transporte por tonelada y kilómetro mediante mula en	L. 3.00
Distancia media de transporte 12/2 Kms	6,000

2.5.3 Computación de las Variables

$$dt = 3.00 - 1.00 = L. 2.00$$

$$dy = \frac{2.00 \times 602 \times 6}{186}$$

$$= 38.84$$

$$B/C = \frac{15.5 \times 38.84 \times 4.15}{5,000 \times .870}$$

$$= 0.57$$

### 3. Resumen de la Evaluación

No.	Ruta del Camino Recorr.	Municipio	Departamento	Beneficio Costo	Prioridades
1	Río Ulúa-La Estancia	San Francisco de Ojuera	Sta. Bárbara	1.02	2
2	San Francisco de Ojuera-El Pilón	San Francisco de Ojuera	Sta. Bárbara	0.16	5
3	San Pedro de Zacapa-Azacualpa	San Pedro de Zacapa	Sta. Bárbara	1.03	1
4	El Tablón-Agua Caliente	San Pedro de Zacapa	Sta. Bárbara	0.86	3
5	San Miguelito-Dolores	Dolores	Intibucá	0.57	4

Para fines de una adecuada presentación del resultado de cada uno de los proyectos en orden de prioridades, los proyectos que tienen las más alta y última prioridad es de la manera siguiente:

- 1) San Pedro de Zacapa-Azacualpa en el Departamento de Santa Bárbara con un Beneficio Costo de L.1.03
- 2) Río Ulúa-La Estancia en el Departamento de Santa Bárbara con un Beneficio Costo de L.1.02
- 3) El Tablón-Agua Caliente en el Departamento de Santa Bárbara con un Beneficio Costo de L.0.86
- 4) San Miguelito-Dolores en el Departamento de Intibucá con un Beneficio Costo de L.0.57
- 5) San Francisco de Ojuera-Al Pilón en el Departamento de Santa Bárbara con un Beneficio Costo de L.0.16

El resultado del Beneficio Costo de cada uno de los proyectos es nada más que un indicador aproximado de la ventajosidad relativa de cada uno de ellos o sea de su presunto impacto socio-económico en cada una de las regiones.

NUMERO DE PROYECTOS

Replón/ Indicador	Puntos de Multipli- cación	Río Ulúa - La Estancia 1		S. Francisco de Ojuera-El Pilón 2		S. Pedro de Zacapa- Azacualpa 3		El Tablón - Agua Caliente 4		San Miguelito - Dolores 5	
		Puntos	Total	Puntos	Total	Puntos	Total	Puntos	Total	Puntos	Total
2.1	3.32	4.0	13.28	4.0	13.28	5.0	16.60	5.0	16.60	5.0	16.60
2.2	1.00	4.0	4.00	5.0	5.00	2.0	2.00	3.0	3.00	1.0	1.00
3.1	8.94	0.5	4.47	0.5	4.47	0.5	4.47	0.5	4.47	0.5	4.47
3.1.1	15.94	3.5	55.79	3.5	55.79	5.0	79.70	5.0	79.70	3.5	55.79
3.1.2	20.12	5.0	100.00	2.0	40.24	5.0	100.60	5.0	100.60	4.5	90.54
3.1.3	3.81	5.0	19.06	0.5	1.91	5.0	19.06	5.0	19.06	3.0	11.43
3.2	1.00	4.0	4.00	5.0	5.00	2.0	2.00	2.0	2.00	3.0	3.00
3.3	1.94	2.0	3.88	2.0	3.88	3.0	5.82	3.0	5.82	2.0	3.88
4.1	2.81	4.0	11.24	4.0	11.24	4.0	11.24	4.0	11.24	4.0	11.24
4.2	1.00	5.0	5.00	5.0	5.00	3.0	3.00	4.0	4.00	3.0	3.00
4.3.1	3.44	2.0	6.88	2.0	6.88	2.0	6.88	2.5	8.60	2.0	6.88
4.3.2	1.00	4.0	4.00	2.0	2.00	1.0	1.00	1.0	1.00	2.0	2.00
4.3.3	1.00	1.0	1.00	5.0	5.00	2.0	2.00	1.0	1.00	5.0	5.00
4.5	2.75	4.0	11.00	5.0	13.75	4.0	11.00	4.0	11.00	5.0	13.75
4.6.1	5.25	3.0	15.75	3.0	15.75	3.0	15.75	3.0	15.75	3.0	15.75
4.6.2	1.00	1.0	1.00	1.0	1.00	3.0	3.00	3.0	3.00	3.0	3.00
4.6.3	1.00	4.0	4.00	1.0	1.00	3.0	3.00	3.0	3.00	2.0	2.00
4.7	1.00	2.0	2.00	2.0	2.00	2.5	2.50	2.5	2.50	0.0	0.00
4.8.1	1.00	1.0	1.00	1.0	1.00	3.0	3.00	3.0	3.00	5.0	5.00
4.8.2	1.00	5.0	5.00	5.0	5.00	2.0	2.00	2.0	2.00	1.0	1.00
4.8.3	1.00	5.0	5.00	5.0	5.00	1.0	1.00	1.0	1.00	1.0	1.00
4.8.4	1.00	5.0	5.00	5.0	5.00	2.0	2.00	2.0	2.00	1.0	1.00
4.9	5.06	2.5	12.65	2.5	12.65	2.0	10.12	2.5	12.65	2.0	10.12
4.10	7.56	3.5	26.46	3.5	26.46	3.5	26.46	3.5	26.46	3.5	26.46
<b>Total de Puntos</b>		322.06		248.30		334.20		339.44		293.91	
<b>Orden de Prioridad</b>		3		5		2		1		4	

4. Determinación de las Prioridades por Medio del Estudio del Departamento de Caminos por Mano de Obra

Como ya mencionado anteriormente, se utilizó en las encuestas los formularios elaborados por el Departamento de Caminos por Mano de Obra para la determinación de las prioridades. Ya existiendo los datos, se evaluaba estos formularios de acuerdo al procedimiento aplicado en el sur de Honduras. Aunque se comete una falta, por el hecho de aplicar en otra área algunos puntos de multiplicación determinados específicamente para el sur, se estima de valor comparar los dos métodos. En la continuación se adjunta los formularios llenados y el cómputo de la evaluación.

El resultado se puede describir como sigue: en ambos métodos los tres proyectos con mayor prioridad son idénticos y en sus valores de prioridad se encuentran muy cerca. La variación entre el puntaje del proyecto con la primera prioridad y la tercera prioridad en ambos casos es de 20%. El siguiente proyecto ya tiene 53% (AID) o 50% (DCMO) menos puntos que el primero.

Pero existe una alteración en el orden de las prioridades de los primeros proyectos.

Proyecto	Prioridades determinadas por el método de	
	US-AID	DCMO
1 Río Ulúa - La Estancia	2	3
2 San Francisco de Ojuera-El Pílon	5	5
3 S. Pedro de Zacapa-Azacualpa	1	2
4 El Tablón-Agua Caliente	3	1
5 San Miguelito-Dolores	4	4

Considerando la gama pequeña de los valores de los primeros dos proyectos, esta situación no resulta contradictoria para los dos métodos.

DEPARTMENT OF STATE  
AGENCY FOR INTERNATIONAL DEVELOPMENT  
WASHINGTON, D C 20523

LA/DR IEE-77-64

ENVIRONMENTAL THRESHOLD DECISION

Location : Honduras  
Project Title : Rural Trails  
Funding : \$400,000 Grant; \$100,000 in FY 78  
Life of Project : 3 years, 1978 - 1980

Mission Recommendation:

Based on the Initial Environmental Examination, the Mission has concluded that the project will not have a significant effect on the human environment and therefore recommends a Negative Determination.

The Latin America Bureau's Environmental Committee has reviewed the Initial Environmental Examination for this project and concurs in the Mission's recommendation for a Negative Determination.

AA/LA Decision:

Pursuant to the authority vested in the Assistant Administrator for Latin America under Title 22, Part 216.4a, Environmental Procedures, and based upon the above recommendation, I hereby determine that the proposed project is not an action which will have a significant effect on the human environment, and therefore, is not an action for which an Environmental Impact Statement or an Environmental Assessment will be required.

*Edward W. Coz*  
for Assistant Administrator  
for Latin America

*August 25 1977*  
Date

Clearances:

LA/DR: B. Wetberg

LA Acting Environmental Coordinator: RA Hasan *RAH*

INITIAL ENVIRONMENTAL EXAMINATION

PART I

Project Location : Honduras

Project Title : Rural Trails  
Project 522-0137

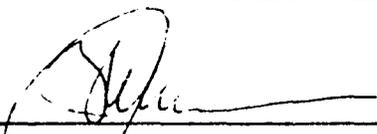
Funding : \$400,000 Grant  
(100,000 FY78)  
(150,000 FY79)  
(150,000 FY80)

Life of Project : 3 years, 1978 - 1980

IEE Prepared by : Roger L. Russell -  
Date: April 6, 1977

Threshold Decision :

- a. Recommendation:  
Negative Determination
- b. Concurrence:

  
 \_\_\_\_\_ Date: May 3, 1977  
 J. B. Robinson, USAID/Honduras  
 Mission Director

- c. Assistant Administrator's/Director's Decision

\_\_\_\_\_ Date:

DESCRIPTION OF THE PROJECT

PART II

The purpose of this project is to initiate a pilot program to increase access to isolated mountain communities by building trails suitable for pack-animal traffic. Presently, the only means of communication to the valleys below are over very narrow, steep and severely eroded trails. These people are isolated from the most elementary government services and are forced to carry their meager produce on their backs to markets. The inhabitants of these areas exist on the meagerest of incomes and depend largely on agriculture for their survival. Building trails that can be used by pack animals will provide a safer, faster and year-round means of transporting produce to markets and bringing supplies and services to the communities. Also the trails will facilitate communication between the isolated residents and government officials who are responsible for basic services yet are understandably reluctant or unable to travel the difficult mountain paths. Conversely people, including children, living in these isolated communities will benefit by being able to get to the basic services that cannot be brought to them.

This project is planned to provide approximately 270 kilometers of Rural Trails for a grant of \$400,000. The trails will be wide enough for two beasts-of-burden to pass in different directions (1.8 meters), will have a maximum grade of 15%, and will have drainage and small foot bridges as required.

About 20 individual trails are planned, each from 4 to possibly 25 kilometers in length. The total of the projects will reach 250 or so villages with about 400 inhabitants per village; thus effecting approximately 100,000 people with this pilot Rural Trails Project.

Many of the sub-projects will be located in the mountainous western half of Honduras, where as much as 25% of the population of the country live, according to the 1974 census.

These people are the poorest in the country with an average annual income of less than \$250 per family. There are no significant cultural differences between the lowland Hondurans and those that have chosen to live in the target

mountain villages; and opening these isolated areas with a minimum pack animal trail will have little effect on the social or ethnic make-up of the area.

These simple trails will be constructed using local labor under a food-for-work and/or a minimum wage program. This will temporarily upgrade living standards while the trails are being built.

Even though the trails affect a large but dispersed area of Honduras, the construction will not alter any water-courses or effect any balance of the ecosystems in the foreseeable future.

## IDENTIFICATION AND EVALUATION OF ENVIRONMENTAL IMPACT

### PART III

Since this project involves construction of very narrow, relatively short, trails over a widely dispersed area of Honduras, the direct environmental impact of the project is limited to minimum right-of-way clearing and small amounts of construction dust. Given the large area that this project covers, the project will not significantly affect the environment and no additional benefit or knowledge will be gained by a more detailed analysis of the environmental impact.

The direct future impacts of improved education, public health and other benefits of access to public facilities cannot yet be measured or evaluated with any precision. However in the long term, they can only be viewed as positive environmental improvements.

Increased access could lead to increased land usage and increased population. This may lead to land clearing

and a positive benefit in providing land to produce more food for individual families and for the entire country. Again, the dispersed areas involved with each project will not materially affect the environment in any concentrated area. Improved trails may have the positive benefit of encouraging families to farm a particular area and reduce the traditional slash and burn techniques of campesinos, thus saving national forest resources of Honduras. Also, the trails will help preserve the forests by providing access to fight forest fires.

Therefore, while some of the indirect results of this project may possibly have some small adverse impact on the natural environment, the total impact on the project area is positive.

The impact Identification Form is attached to this IEE as a reference.

#### RECOMMENDATION FOR ENVIRONMENTAL ACTION

##### PART IV

Since the Rural Trails Project does not involve any actions that will have a direct adverse effect on the human environment, a Negative Determination is proposed.



IMPACT IDENTIFICATION AND EVALUATION FORM

C. ATMOSPHERIC

1. Air additives -----	<u>          N          </u>
2. Air pollution -----	<u>          N          </u>
3. Noise pollution -----	<u>          N          </u>
4. Other factors	
<u>Short Term Construction Air Pollution</u>	<u>          L          </u>
_____	_____

D. NATURAL RESOURCES

1. Diversion, altered use of water -----	<u>          N          </u>
2. Irreversible, inefficient commitments -----	<u>          N          </u>
3. Other factors	
_____	_____
_____	_____

E. CULTURAL

1. Altering physical symbols _____	<u>          N          </u>
2. Dilution of cultural traditions _____	<u>          N          </u>
3. Other factors	
_____	_____
_____	_____

F. SOCIO-ECONOMIC

1. Changes in economic/employment patterns ----	<u>          M          </u>
2. Changes in population -----	<u>          L          </u>
3. Changes in cultural patterns -----	<u>          N          </u>
4. Other factors	
_____	_____
_____	_____

IMPACT IDENTIFICATION AND EVALUATION FORM

G. HEALTH

1. Changing a natural environment -----	<u>          N          </u>
2. Eliminating an ecosystem element -----	<u>          N          </u>

3. Other factors

\_\_\_\_\_  
\_\_\_\_\_

H. GENERAL

- |                                 |                  |
|---------------------------------|------------------|
| 1. International impacts -----  | <u>    N    </u> |
| 2. Controversial impacts -----  | <u>    N    </u> |
| 3. Larger program impacts ----- | <u>    N    </u> |
| 4. Other factors                |                  |

\_\_\_\_\_  
\_\_\_\_\_

I. OTHER POSSIBLE IMPACTS (not listed above)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## ANNEX 4

PROJECT DESIGN SUMMARY  
LOGICAL FRAMEWORK

Project Title &amp; Number: RURAL TRAILS 522-0137

Life of Project:  
From FY 1978 to FY 1979  
Total U.S. Funding \$400,000  
Date Prepared: January, 1978

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Program or Sector Goal: The broader objective to which this project contributes: Goal: To improve the quality of life of rural people living in isolated mountainous areas of Honduras.</p>	<p>Measures of Goal Achievement:</p> <ol style="list-style-type: none"> <li>1. increase in disposable income of the small farmer of between \$8 and \$24 per year as a minimum.*</li> <li>2. increased benefits from utilization of public and private services, e.g. increased school attendance and visits to health posts.</li> <li>3. increase in benefits from services offered by GOH and private institutions, e.g. visits by extension agents and promoters.</li> </ol>	<p>Case study records</p>	<p>Assumptions for achieving goal targets:</p> <p>transportation savings will accrue largely to farmers rather than to transportation sector.</p>
<p>Purpose: To test the feasibility of improving access to and from isolated rural communities in Honduras at low cost by constructing easily maintained jeep trails.</p>	<ol style="list-style-type: none"> <li>1. trails passable year-round by 4-wheel drive vehicles.</li> <li>2. transportation costs reduced by a minimum of \$1.80/ton/km.</li> <li>3. design and construction of trails adopted and continued by GOH.</li> </ol>	<p>Case study records</p>	<p>Local leader's will accept responsibility for road maintenance.</p>
<p>Output:</p> <ol style="list-style-type: none"> <li>1. approximately 165 km of foot and mule paths upgraded to nearly all weather, jeep trails.</li> <li>2. a system of maintenance for the trails.</li> <li>3. case studies.</li> <li>4. refined designs for trails, drainage and bridges.</li> <li>5. trail selection procedure.</li> <li>6. personnel trained in trail design and construction.</li> </ol>	<ol style="list-style-type: none"> <li>1. 165 km. of jeep trails constructed by the end of CY 1979.</li> <li>2. each community has designated responsibility for maintenance and has trained personnel.</li> <li>3. report issued on results of case studies by the end of 1978.</li> <li>5. report issued on trail selection procedure by the end of CY 1978.</li> <li>6. department personnel able to carry out activities without assistance by the end of CY 1979.</li> </ol>	<p>Project records and inspection</p>	<ol style="list-style-type: none"> <li>1. right-of-way problems can be resolve expeditiously.</li> <li>2. sufficient labor is available in construction sites at low wages.</li> </ol>

\* This minimum figure will be generated from transport savings alone. The non-quantified benefits from increased delivery of health, education, agricultural, and other services are expected to be significant and to have substantial impact on the quality of life of people living in benefitting communities.

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6C(1) - COUNTRY CHECKLIST

Listed below are, first, statutory criteria applicable generally to FAA funds, and then criteria applicable to individual fund sources: Development Assistance and Security Supporting Assistance funds.

A. GENERAL CRITERIA FOR COUNTRY

1. FAA Sec. 116. Can it be demonstrated that contemplated assistance will directly benefit the needy? If not, has the Department of State determined that this government has engaged in consistent pattern of gross violations of internationally recognized human rights?  
The Project Paper demonstrates that the assistance will benefit the needy.
2. FAA Sec. 481. Has it been determined that the government of recipient country has failed to take adequate steps to prevent narcotics drugs and other controlled substances (as defined by the Comprehensive Drug Abuse Prevention and Control Act of 1970) produced or processed, in whole or in part, in such country, or transported through such country, from being sold illegally within the jurisdiction of such country to U.S. Government personnel or their dependents, or from entering the U.S. unlawfully?  
The GOH has taken adequate steps to control illegal narcotics traffic. A special Narcotics Investigation Branch was established within the Police Bureau (CES) in 1970. Honduras is not at this time a channel for international traffic in heroin or cocaine and most cases, have been in the area of international use, sale or growing of marijuana, or sale amphetamines or barbiturates. The Honduras Police have previously cooperated with BNDD. Legislation has been passed which up-dates a previous law by providing criminal penalties for newer forms of drug abuse.
3. FAA Sec. 620(a). Does recipient country furnish assistance to Cuba or fail to take appropriate steps to prevent ships or aircraft under its flag from carrying cargoes to or from Cuba?  
Honduras neither furnishes assistance to Cuba nor permits ships or aircraft under its to carry cargo to or from Cuba.
4. FAA Sec. 620(b). If assistance is to a government, has the Secretary of State determined that it is not controlled by the international Communist movement?  
The Secretary of State has determined that Honduras is not controlled by the international communist movement.
5. FAA Sec. 620(c). If assistance is to government, is the government liable as debtor or unconditional guarantor on any debt to a U.S. citizen for goods or services furnished or ordered where (a) such citizen has exhausted available legal remedies and (b) debt is not denied or contested by such government?  
A.I.D. knows of no such indebtedness of any U.S. citizen.
6. FAA Sec. 620(d) (1). If assistance is to a government, has it (including government agencies or subdivisions) taken any action which has the effect of nationalizing, expropriating, or otherwise seizing ownership or control of property of U.S. citizens or entities beneficially owned by them without taking steps to discharge its obligations toward such citizens or entities?  
There is no evidence of any such action.

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- 7. FAA Sec. 620(f); App. Sec. 108. Is recipient country a communist country? Will assistance be provided to the Democratic Republic of Vietnam (North Vietnam), South Vietnam, Cambodia or Laos?
 

Honduras is not a communist country. Assistance will not be provided to North or South Vietnam, Cambodia or Laos.
- 8. FAA Sec. 620(i). Is recipient country in any way involved in (a) subversion of, or military aggression against, the United States or any country receiving U.S. assistance, or (b) the planning of such subversion or aggression?
 

A.I.D. has no evidence of any subversion or aggression or of plans for any such action against any country.
- 9. FAA Sec. 620(i). Has the country permitted, or failed to take adequate measures to prevent, the damage or destruction, by mob action, of U.S. property?
 

During the period of unrest caused by factors such as a recent change of government in Chile where public attention is focussed on the U.S. the GOH has at times been unsuccessful in containing demonstrations which resulted in damage to USG property. The GOH now provides guards for the Chancery during period of unrest.
- 10. FAA Sec. 620(i). If the country has failed to institute the investment guaranty program for the specific risks of expropriation, inconvertibility or confiscation, has the AID Administrator within the past year considered denying assistance to such government for this reason?
 

The OPIC Investment Guaranty Program is in operation in the country.
- 11. FAA Sec. 620(o); Fishermen's Protective Act, Sec. 5. If country has seized, or imposed any penalty or sanction against, any U.S. fishing activities in international waters,
 

Honduras has not seized or imposed any penalties or sanctions against U.S. fishing vessels because of their activities in international water during recent years.

  - a. has any deduction required by Fishermen's Protective Act been made?
  - b. has complete denial of assistance been considered by AID Administrator?
- 12. FAA Sec. 620(g); App. Sec. 504. (a) Is the government of the recipient country in default on interest or principal of any AID loan to the country? (b) Is country in default exceeding one year on interest or principal on U.S. loan under program for which App. Act appropriates funds, unless debt was earlier disputed, or appropriate steps taken to cure default?
 

Honduras is not in default on any such loans.
- 13. FAA Sec. 620(s). What percentage of GOH budget is for military expenditures? How much of foreign exchange resources spent on military equipment? How much spent for the purchase of sophisticated weapons systems? (Consideration of these points is to be coordinated with the Bureau for Program and Policy Coordination, Regional Administrators, and Military Assistance Staff (FPC/RC).)
 

According to officially release figures 8.6% of the GOH budget was allocated to military spending during 1976. It is estimated that a very small percentage of foreign exchange resources are spent on military equipment. The Mission does not consider the equipment purchased could be classified as "sophisticated weapons systems".

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- 14. FAA Sec. 620(b). Has the country severed diplomatic relations with the United States? If so, have they been resumed and have new bilateral assistance agreements been negotiated and entered into since such resumption? Honduras has maintained diplomatic relations with U.S.
- 15. FAA Sec. 620(u). What is the payment status of the country's U.N. obligations? If the country is in arrears, were such arrearages taken into account by the AID Administrator in determining the current AID Operational Year Budget? Honduras is not in arrears to the extent described in Article 19 of the U.N. Charter.
- 16. FAA Sec. 620A. Has the country granted sanctuary from prosecution to any individual or group which has committed an act of international terrorism? NO.
- 17. FAA Sec. 666. Does the country object, on basis of race, religion, national origin or sex, to the presence of any officer or employee of the U.S. there to carry out economic development program under FAA? NO.
- 18. FAA Sec. 669. Has the country delivered or received nuclear reprocessing or enrichment equipment, materials or technology, without specified arrangements on safeguards, etc.? NO.
- 19. FAA Sec. 901. Has the country denied its citizens the right or opportunity to emigrate? NO.

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B. FUNDING CRITERIA FOR COUNTRY

1. Development Assistance Country Criteria

a. FAA Sec. 102(c), (d). Have criteria been established, and taken into account, to assess commitment and progress of country in effectively involving the poor in development, on such indexes as: (1) small-farm labor intensive agriculture, (2) reduced infant mortality, (3) population growth, (4) equality of income distribution, and (5) unemployment.

Criteria for assessing progress in involving the poor in development have been set through Sector and sub sector assessments in Agriculture, Education, and Nutrition.

b. FAA Sec. 201(b)(5), (7) & (8); Sec. 208; 211(5)(5), (7). Describe extent to which country is:

Major investment is being made in agricultural credit, technical assistance and other services for farmers aimed at increasing food production. Major storage facilities and rural buying stations are being up-graded and enlarged.

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

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

A favorable climate for investment exists and specialized GOH agencies such as the National Development Company and the Ministry of Economy are being effective in attracting internal and external resources for private investment.

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- (3) Increasing the public's role in the developmental process.
- (4) (a) Allocating available budgetary resources to development.  
  
(b) Diverting such resources for unnecessary military expenditure and intervention in affairs of other free and independent nations.
- (5) 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.
- (6) Otherwise responding to the vital economic, political, and social concerns of its people, and demonstrating a clear determination to take effective self-help measures.

c. IAA Sec. 201(b), 211(a). Is the country among the 30 countries in which development assistance loans may be made in this fiscal year, or among the 40 in which development assistance grants (other than for self-help projects) may be made?

d. IAA Sec. 115. Will country be furnished, in same fiscal year, either security supporting assistance, or Middle East peace funds? If so, is assistance for population programs, humanitarian aid through international organizations, or regional programs?

2. Security Supporting Assistance Country Criteria

a. IAA Sec. 5026. Has the country engaged in a consistent pattern of gross violations of internationally recognized human rights? Is program in accordance with policy of this Section?

b. IAA Sec. 53. Is the Assistance to be furnished to a friendly country, organization, or body eligible to receive assistance.

c. IAA Sec. 602. If commodities are to be granted so that sale proceeds will accrue to the recipient country, have Special Account (counterpart) arrangements been made?

(3) The Government is pursuing a clear policy aimed at increasing the participation of all sectors in the development of Honduras. In the past few years the number and size of programs that benefit the poor has been greatly expanded.

(4) Honduras has been allocating approximately 25% of the budget in the recent past to investment programs.

(b) While military expenditures have increased they seem to be reasonable in comparison with total government expenditures. Honduras has not interfered in the affairs of other free and independent nations.

(5) Major reforms initiated during the last few years include a strong agrarian reform investment (under which tens of thousands hectares have been distributed to poor farmers) and a land taxation program (which is being assisted through an A.I.D. Loan).

(6) The National Development Plan and the Government's action programs clearly define its commitment to help raise the incomes of the poor majority, and to shift development efforts more towards rural areas where the majority of the poor are found.

(c) Congress has been informed that A.I.D. intends to confirm development assistance loan and grant activities in Honduras.

(d) Honduras is not a recipient of security supporting assistance or middle East peace funds.

Not applicable.

Not applicable.

Not applicable.

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6C(2) - PROJECT CHECKLIST

Listed below are, first, statutory criteria applicable generally to projects with FAA funds, and then project criteria applicable to individual fund sources: Development Assistance (with a sub-category for criteria applicable only to loans); and Security Supporting Assistance funds.

CROSS REFERENCES: IS COUNTRY CHECKLIST UP TO DATE? IDENTIFY. HAS STANDARD ITEM CHECKLIST BEEN REVIEWED FOR THIS PROJECT?

I. GENERAL CRITERIA FOR PROJECT.

1. App. Unnumbered; FAA Sec. 653(b)

(a) Describe how Committees on Appropriations of Senate and House have been or will be notified concerning the project;  
(b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than \$1 million over that figure plus 10%)?

The project was included in the FY 78 Congressional Presentation; a Congressional notice will be sent in FY 78 informing Congress of A.I.D.'s intention to increase funding in FY 78 while not changing the level of life of project funding.

2. FAA Sec. 611(a)(1). Prior to obligation in excess of \$100,000, will there be (a) engineering, financial, and other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?

The required plans have been completed and a reasonably firm estimate of the cost to the U.S. of the Activity to be financed has been obtained.

3. FAA Sec. 611(a)(2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?

No legislation action will be required within recipient country

4. FAA Sec. 611(b); App. Sec. 101. If for water or water-related land resource construction, has project met the standards and criteria as per Memorandum of the President dated Sept. 5, 1973 (replaces Memorandum of May 15, 1962; see Fed. Register, Vol 38, No. 174, Part III, Sept. 10, 1973)?

Not applicable.

5. FAA Sec. 611(e). If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed \$1 million, has Mission Director certified the country's capability effectively to maintain and utilize the project?

Not applicable.

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6. FAA Sec. 209, 619. Is project susceptible of execution as part of regional or multi-lateral project? If so why is project not so executed? Information and conclusion whether assistance will encourage regional development programs. If assistance is for newly independent country, is it furnished through multi-lateral organizations or plans to the maximum extent appropriate?

The Project is not suitable for execution as part of a regional project

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7. FAA Sec. 601(a); (and Sec. 201(f) for development loans). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (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.

Project will indirectly increase the flow of international trade by inducing increased agricultural production, will foster private initiative and competition, will discourage monopolistic commercial practices, and will improve the technical efficiency of agriculture (indirectly) and of commerce (directly). It will not have any apparent effect on cooperatives, industry or free labor unions.

8. FAA Sec. 601(b). Information and conclusion on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).

The tools to be purchased under the program are expected to be of U.S. origin.

9. FAA Sec. 612(b); Sec. 636(h). Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized to meet the cost of contractual and other services.

Honduras is contributing local currency to the project. See the financial analysis section of the PP for details. No U.S. owned foreign currencies are available for utilization in the project.

10. FAA Sec. 612(d). Does the U.S. own excess foreign currency and, if so, what arrangements have been made for its release?

The U.S. does not own such excess foreign currency.

B. FUNDING CRITERIA FOR PROJECT

1. Development Assistance Project Criteria

a. FAA Sec. 102(c); Sec. 111; Sec. 281a. Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production, spreading investment out from cities to small towns and rural areas; and (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage democratic private and local governmental institutions?

Project is specifically directed towards involving the poor-in-development by extending access to economy at local level by means of spreading infrastructure into isolated, rural areas. Labor-intensive construction technology will be used. The reliance of the project on local private and governmental institutions to implement the project will encourage democratic participation.

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b. FAS Nos. 103, 104, 105, 106, 107. Is assistance being made available; [include only applicable paragraph -- e.g., a, b, etc. -- which corresponds to source of funds used. If more than one fund source is used for project, include relevant paragraph for each fund source.]

- (1) [103] for agriculture, rural development or nutrition; if so, extent to which activity is specifically designed to increase productivity and income of rural poor; [103A] if for agricultural research, is full account taken of needs of small farmers;
- (2) [104] for population planning or health; if so, extent to which activity extends low-cost, integrated delivery systems to provide health and family planning services, especially to rural areas and poor;
- (3) [105] for education, public administration, or human resources development; if so, extent to which activity strengthens nonformal education, makes formal education more relevant, especially for rural families and urban poor, or strengthens management capability of institutions enabling the poor to participate in development;
- (4) [106] for technical assistance, energy, research, reconstruction, and selected development problems; if so, extent activity is:
  - (a) technical cooperation and development, especially with U.S. private and voluntary, or regional and international development, organizations;
  - (b) to help alleviate energy problem;
  - (c) research into, and evaluation of, economic development processes and techniques;
  - (d) reconstruction after natural or man-made disaster;
  - (e) for special development problem, and to enable proper utilization of earlier U.S. infrastructure, etc., assistance;
  - (f) for program of urban development, especially small labor-intensive enterprises, marketing systems, and financial or other institutions to help them to participate in economic and social development.

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Project is designed to test the feasibility of improving access to isolated, rural villages using low-cost infrastructure improvements, specifically jeep trails.

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(5) [107] by grants for coordinated private effort to develop and disseminate intermediate technologies appropriate for developing countries.

c. FAA Sec. 110(a); Sec. 208(e). Is the recipient country willing to contribute funds to the project, and in what manner has or will it provide assurances that it will provide at least 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or has the latter cost-sharing requirement been waived for a "relatively least-developed" country)?

d. FAA Sec. 110(b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing?

e. FAA Sec. 207; Sec. 113. Extent to which assistance reflects appropriate emphasis on; (1) encouraging development of democratic, economic, political, and social institutions; (2) self-help in meeting the country's food needs; (3) improving availability of trained worker-power in the country; (4) programs designed to meet the country's health needs; (5) other important areas of economic, political, and social development, including industry; free labor unions, cooperatives, and Voluntary Agencies; transportation and communication; planning and public administration; urban development, and modernization of existing laws; or (6) integrating women into the recipient country's national economy.

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

The Grant Agreement will commit the GOH to provide at least 25% of the total project costs. Past experience indicates that this commitment will be honored without further assurances.

The project will be dispersed over a period of two years.

Project is focussed on helping to extend low-cost transportation into isolated, rural agricultural areas.

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The project has been designed to meet the needs desires and capacities of the populace of western Honduras. The project encourages the development of local community betterment committees and will provide selected people in the local community with improved construction and organizational skills.

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g. FAA Sec. 201(b)(2)-(4) and -(8); Sec. 201(a); Sec. 201(c)(1) and -(8). Does the activity have reasonable promise of contributing to the development of economic resources, or to the increase of productive capacities and self-sustaining economic growth; or of educational or other institutions directed toward social progress? Is it related to and consistent with other development activities, and will it contribute to realizable long-range objectives? And does project paper provide information and conclusion on an activity's economic and technical soundness?

The project will contribute directly to the economic development of western Honduras. The integration of isolated communities into the national economy will lower the cost of and increase agricultural production. It is consistent with, and is a necessary condition for other development activities in the area. The paper provides information on the activity's soundness.

h. FAA Sec. 201(b)(6); Sec. 211(a)(5), (6). Information and conclusion on possible effects of the assistance on U.S. economy, with special reference to areas of substantial labor surplus, and extent to which U.S. commodities and assistance are furnished in a manner consistent with improving or safeguarding the U.S. balance-of-payments position.

The small size of the project will prevent its having any more than a marginal impact on the U.S. economy.

2. Development Assistance Project Criteria (Loans only)

**Not applicable.**

a. FAA Sec. 201(b)(1). Information and conclusion on availability of financing from other free-world sources, including private sources within U.S.

b. FAA Sec. 201(b)(2); 201(d). Information and conclusion on (1) capacity of the country to repay the loan, including reasonableness of repayment prospects, and (2) reasonableness and legality (under laws of country and U.S.) of lending and relending terms of the loan.

c. FAA Sec. 201(e). If loan is not made pursuant to a multilateral plan, and the amount of the loan exceeds \$100,000, has country submitted to AID an application for such funds together with assurances that funds will be used in an economically and technically sound manner?

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d. FAA Sec. 201(f). Does project paper describe how project will promote the country's economic development taking into account the country's material resources requirements and relationship to the development objectives of the project and overall economic level?

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c. FAA Sec. 512(a). Total amount of money under loan which is going directly to private enterprise, is going to intermediate credit institutions or other borrowers for use by private enterprise, is being used to finance imports from private sources, or is otherwise being used to finance procurements from private sources?

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

3. Project Criteria Solely for Security Supporting Assistance

**Not applicable.**

FAA Sec. 531. How will this assistance support promote economic or political stability?

4. Additional Criteria for Alliance for Progress

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[Note: Alliance for Progress projects should add the following two items to a project checklist.]

a. FAA Sec. 251(b)(1), -(8). Does assistance take into account principles of the Act of Bogota and the Charter of Punta del Este; and to what extent will the activity contribute to the economic or political integration of Latin America?

The project takes into account the principles of the Act of Bogota and the Punta del Este Charter. It is not expected to contribute to any great extent in directly furthering economic or political integration of Latin America.

b. FAA Sec. 251(b)(9); 251(h). For loans, has there been taken into account the effort made by recipient nation to repatriate capital invested in other countries by their own citizens? Is loan consistent with the findings and recommendations of the Inter-American Committee for the Alliance for Progress (now "CEPCIES," the Permanent Executive Committee of the OAS) in its annual review of national development activities?

**Not applicable.**

**CONSEJO SUPERIOR DE PLANIFICACION ECONOMICA**  
**TEGUCIGALPA, D. C., HONDURAS, C. A.**

Annex 6

23 de noviembre de 1977  
Of. N° DPI/3424.

Sr. J. b. Robinson  
AID/HON  
Ciudad.

Señor Robinson:

Como es de su conocimiento, el gobierno de Honduras está orientando sus esfuerzos y recursos hacia el logro de un desarrollo integral, sustancial y sostenido del país, siguiendo las directrices contenidas en el Plan Nacional de Desarrollo 1974-78. Para el logro de los grandes objetivos y metas propuestas en el referido Plan, se está concentrando gran parte de las acciones hacia el Sector Agrícola, que se considera como fundamental para el desarrollo de los demás sectores de la economía.

Como también es de su conocimiento, una de las principales barreras para el desarrollo de la zona de Occidente, es el deficiente y costoso sistema de transporte de las fincas a los centros de comercialización.

Esto se debe a que la Región es montañosa y la construcción de caminos de acceso con normas o standards acostumbrados resulta costosa, en cambio si se aprovecha la mano de obra disponible en la Zona con técnicas adecuadas y con un diseño de especificaciones apropiadas para permitir el paso de vehículos de doble tracción, el costo de construcción puede reducirse.

Con miras a acelerar el desarrollo de actividades específicas, esta Secretaría Técnica considera de importancia prioritaria el fortalecimiento de la Dirección General de Caminos, dependiente del Ministerio de Comunicaciones, Obras Públicas y Transporte, para mejoramiento de los caminos de acceso a las zonas rurales, usando la mano de obra disponible en esas zonas.

En vista de lo anterior y estando plenamente conscientes de las serias limitaciones de recursos financieros y humanos que sufre Honduras, muy atentamente nos permitimos solicitar que esa prestigiada Agencia proporcione la suma de US\$400,000 en calidad de donación y que harán posible la ejecución de un proyecto piloto de caminos de acceso construídos con mano de obra.

El proyecto en su conjunto tendrá un costo estimado de US\$712, que se invertirán en un plazo de dos años (1978-79), en los montos que se detallan en el cuadro adjunto.

**CONSEJO SUPERIOR DE PLANIFICACION ECONOMICA**

**TEGUCIGALPA, D. C., HONDURAS, C. A.**

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La asistencia que proporcione esa Agencia no sólo la consideraremos vital para la ejecución del proyecto, sino que también constituirá un importante factor de motivación y cohesión entre las personas de las comunidades rurales que sirva el Proyecto.

En espera de su amable atención a la presente, le reitero a usted las muestras de mi distinguida consideración,

Atentamente.



ARTURO CORLETO M.  
Secretario Ejecutivo.

## AENB

C. SUMARIO ESTIMADO DEL COSTO Y PLAN FINANCIERO  
(U.S.\$000)

	AID	G. de E.	Comu- nidad	Alimento por trabajo	Total
<u>Administración General y AT</u>					
Local para oficina, suministros, seguro social, derecho de vía.	-	25	-	-	25
Ingeniería	20	-	-	-	20
AT: Eval. selección, construc.	40	8	-	-	48
Transporte	-	58	-	-	58
<u>herramientas manuales</u>					
Original	14	-	-	-	14
Impuestos	1	-	-	-	1
Mantenimiento	3	-	-	-	3
<u>Puentes de suspensión (4)</u>					
Materiales	22	-	1	-	23
Mano de obra	4	-	-	3	7
<u>Pequeños puentes (6)</u>					
Materiales	5	-	1	-	6
Mano de obra	2	-	-	2	4
<u>Construcción general (165 Kms.)</u>					
Materiales	92	-	75	-	167
Mano de obra	157	-	-	139	296
<u>Imprevistos</u>	40	-	-	-	40
<u>Total</u>	400	91	77	144	712

EXPLANATION OF DIFERENCES BETWEEN GOH REQUEST AND  
PROJECT PAPER

Several changes were made in the proposed project budget (see table III of Financial Plan section) subsequent to receiving the formal GOH request for assistance. While the amount of the A.I.D. contribution has not changed, \$20,000 was transferred from the line item "ingeniería" to "herramientas manuales" which now includes other equipment for experimental purposes. The GOH contribution has changed as follows: the inclusion of \$21,000 for engineering services and \$17,000 for dynamite, and the reduction by \$10,000 for right-of-way purchase for a net increase of a little over \$28,000. The GOH has indicated at the staff level that these changes are necessary and will not cause budgetary difficulties.