526-0111

526011-3
PD-AFF-985-A1

526-0111

526011004201

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT PAPER FACESHEET

1. TRANSACTION CODE: A (A = ADD, C = CHANGE, D = DELETE)

2. DOCUMENT CODE: PP 3

3. COUNTRY/ENTITY: PARAGUAY

4. DOCUMENT REVISION NUMBER:

5. PROJECT NUMBER (7 digits): 526-0111

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

7. PROJECT TITLE (Maximum 40 characters): RURAL ROADS

8. ESTIMATED FY OF PROJECT COMPLETION: FY 82

9. ESTIMATED DATE OF OBLIGATION: A. INITIAL FY 78; B. QUARTER 3 (Enter 1, 2, 3, or 4); C. FINAL FY 78

10. ESTIMATED COSTS ($000 OR EQUIVALENT $1 –)

A. FUNDING SOURCE	FIRST FY B. FX	FIRST FY C. L/C	FIRST FY D. TOTAL	LIFE OF PROJECT E. FX	LIFE OF PROJECT F. L/C	LIFE OF PROJECT G. TOTAL
AID APPROPRIATED TOTAL	4,434	766	5,200			5,200
(GRANT)	( )	( )	( )	( )	( )	( )
(LOAN)	(4,434)	(766)	(5,200)	( )	( )	(5,200)
OTHER U.S. 1.						
OTHER U.S. 2.						
HOST COUNTRY		2,425	2,425			2,425
OTHER DONOR(S)		715	715			715
TOTALS	4,434	3,906	8,340			8,340

11. PROPOSED BUDGET APPROPRIATED FUNDS ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE C. GRANT	PRIMARY TECH. CODE D. LOAN	E. 1ST FY 78 F. GRANT	E. 1ST FY 78 G. LOAN	H. 2ND FY ___ I. GRANT	H. 2ND FY ___ J. LOAN	K. 3RD FY ___ L. GRANT	K. 3RD FY ___ M. LOAN
(1) FN	130		061		5,200				
(2)									
(3)									
(4)									
TOTALS									

A. APPROPRIATION	N. 4TH FY ___ O. GRANT	N. 4TH FY ___ P. LOAN	Q. 5TH FY ___ R. GRANT	Q. 5TH FY ___ S. LOAN	LIFE OF PROJECT T. GRANT	LIFE OF PROJECT U. LOAN
(1) FN						5,200
(2)						
(3)						
(4)						
TOTALS						

12. IN-DEPTH EVALUATION SCHEDULED: MM 06 YY 80

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 FACE: 1 (1 = NO, 2 = YES)

14. ORIGINATING OFFICE CLEARANCE

SIGNATURE

TITLE: Abe M. Peña
Director, USAID/Paraguay

DATE SIGNED: MM 01 DD 06 YY 78

15. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION: MM 01 DD 09 YY 78

AID 1330-4 (3-76)

C O N T E N T S

Page

PART I - PROJECT SUMMARY AND RECOMMENDATIONS

A. Facesheet 1

B. Recommendations..... 2

C. Description of Project..... 2

D. Summary Findings..... 3

E. Project Issues..... 3

F. Rural Roads Project Committee..... 4

PART II - BACKGROUND AND DETAILED DESCRIPTION

A. Project Background..... 5

1. Background..... 5
2. Priority and Relevance..... 5
   a. Economic Setting..... 5
   b. Constraints to Increased Agricultural Production..... 7
      (1) Technology..... 8
      (2) Marketing..... 8
      (3) Labor and Land Utilization..... 8
      (4) Capital and Credit..... 8
      (5) Roads..... 9
   c. Strategy..... 9
3. Road System Overview..... 11
4. Other Donor Programs..... 15

B. Logical Framework and Detailed Description..... 16

1. Sector Goal..... 16
2. Purpose..... 16
3. End of Project Status..... 16
4. Important Assumptions..... 17
5. Planned Outputs..... 17
6. Inputs..... 17
7. Logical Framework..... 18
8. Project Focus..... 22
9. Institutional Roles..... 23
   a. Caminos Vecinales..... 24

(1) Director's Office..... 24
(2) Administrative Section..... 30
(3) Technical Section..... 30
b. Regional Road Committees..... 31
(1) Director..... 32
(2) Administrator..... 32
(3) Equipment Yard..... 34
c. Local Road Committees..... 34
d. Road Promotion Committees..... 35
e. Technical Assistance..... 36
f. Administrative Study..... 37
g. How the System will Function..... 38

PART III - PROJECT ANALYSIS

A. Technical and Engineering Analysis..... 39
1. Technology (machine/labor) Mix..... 39
a. General..... 39
b. Evaluation of Alternatives..... 40
2. Design Standards..... 40
3. Engineering and Construction..... 42
a. Engineering Surveys..... 44
b. Soil Studies..... 44
c. Design..... 44
d. Construction..... 44
e. Summary Costs, Supervision, and Monitoring..... 46
4. Equipment and Equipment Maintenance..... 46
5. Road Maintenance..... 50
6. Equipment Procurement..... 50
7. Potential for Continuation of Rural Road Construction 51

B. Social Analysis..... 52
1. Sociocultural Feasibility..... 52
a. Socioeconomic characteristics of the target population and region..... 52
b. The Target Group and the Transportation System.. 61
2. Spread Effects of the Proposed Project..... 64
3. Social Consequences and Benefit Incidence..... 65

C. Financial Analysis and Plan..... 69
1. Financial Burden on Beneficiaries..... 69
2. Financial Plan/Budget Tables..... 70
a. Financial Plan..... 70
b. A.I.D. Loan Costs..... 71
c. Government of Paraguay Costs..... 71
d. Community Costs..... 72

3. Examination of Community Contribution..... 72
4. Delivery of GOP Counterpart..... 79

D. Economic Analysis..... 82
1. Role of Road Transportation in the Economic Development of Paraguay..... 82
a. Economic Situation and Prospects..... 82
b. Financing the Road Program and Government Plans. 84
2. The Benefit/Cost Approach Used..... 86
3. Calculating the Benefit/Cost Ratio..... 91
a. Regional and National Roles in Coordinating B/C Analysis..... 91
b. Use of Farm Survey and Various Maps to Estimate Benefits..... 92
c. B/C Equation to be Used for Analysis..... 92
4. Illustrative Benefit/Cost Analysis of the Colonia Boquerón Road..... 95
5. Criteria for Selecting Roads..... 97

PART IV - IMPLEMENTATION ARRANGEMENTS

A. Institutional Analysis..... 99
1. The Directorate of Roads..... 99
a. Brief History..... 99
b. Legal Responsibilities..... 99
c. Organization..... 100
d. Resources..... 100
e. Experience in External Financing..... 102
f. Current Involvement in Rural Roads..... 102
g. Caminos Vecinales..... 102
h. Summary..... 103
2. The General Directorate of Road Committees (GDRC)... 103
a. History and Background..... 103
b. The Road Conscription Service..... 104
c. Local Road Committees (LRCs)..... 104
d. Regional Road Committees (RRCs)..... 105
e. The General Directorate (GDRC) Central Office... 106
f. Resources..... 107
g. Experience in Rural Roads..... 107
h. Experience in External Financing..... 107
i. Summary..... 108
3. Institutional Roles in Project Execution..... 108
a. Rationale..... 108
b. Role of the General Directorate of Road Committees..... 109
c. Role of the Caminos Vecinales..... 109
d. Project Coordination..... 110
e. Technical Assistance..... 110

B. Implementation Plan..... 111
C. Role of USAID..... 114
D. Evaluation Plan..... 115

ANNEXES

I. DAEC Cable

II. Logical Framework (This has become pages 18 through 21 of PP.)

III. Legal Exhibits

1. 611(e) Certification
2. Checklist of Statutory Criteria
3. Loan Request Letter
4. Draft Loan Authorization

IV. Project Exhibits

1. Map of Project Area
2. Design Criteria and Detailed Cost Estimates
3. Description of Model Candidate Roads
4. Equipment List
5. Implementation Details

V. Organization Charts (This has become pages 26 through 29 of PP.)

VI. Analysis of Road Committee System

VII Initial Environmental Examination

VIII. Financial Details of Project

IX. Economic Details of Project

1. Farm Data
2. Illustrative Feasibility Analysis
3. Transport Cost Savings
4. Road Maintenance Costs

X. Crop Calendar

B. Recommendations

Loan	$5.2 million
Disbursement Period	4 years
Terms: 20 years, 10 year grace period 2% interest during grace, 3% thereafter	
Total new A.I.D. obligation	$5,200,000

C. Description of the Project

The rural roads project has its foundation in two facts: (1) a weak rural roads infrastructure exists in Paraguay and it has been identified by Paraguayans and foreign assistance groups as a major constraint to many kinds of social and economic changes; and (2) the existence of the road committee system (Juntas Viales) is a well accepted and legally established institution active in rural road construction and maintenance. The project proposes to build upon this foundation in order to benefit the target group.

The Ministry of Public Works and Communications (MOPC) will be the implementing agent. To administer and coordinate the project, a new permanent unit, Caminos Vecinales, will be established and will be placed under the Minister's office, but in practice will report to the Director of the Directorate of Roads (DR). The road committees in the departments of the project, Cordillera, Caaguazú, Guairá and Paraguarí will be transferred from the General Directorate of Road Committees (GDRC) to Caminos Vecinales to facilitate coordination with the existing technical capabilities of the DR, e.g., engineering design, equipment procurement, operation and maintenance. By transferring the road committees in their entirety to Caminos Vecinales, the grass-roots nature of the system will not be affected and local community participation will be guaranteed. Subprojects will need to comply with a set of social and economic criteria which will not only assure sub-project feasibility but also impact on the target group.

The AID loan will finance equipment, construction materials, technical assistance, and a special administrative study of the implementation arrangements. The study is to be conducted after the second year of project operations. The GOP contribution of $2,425,000 will cover the expenses of the new unit in the MOPC, operating expenses, equipment maintenance and construction materials. Local communities will also contribute to the project. Their $715,000 contribution will provide materials, fuel, and labor.

From these inputs the following major outputs are expected: (1) existing rural road committees trained, (2) new road committees formed and operating, (3) all echelons of rural roads institutions from the Directorate of Roads to Road Promotion Committees having the necessary resources, both physical and financial, to respond to requests for roads, and (4) a study based on the experience of this project to determine the best institutional arrangement for rural road responsibility throughout Paraguay.

With the DR and the rural roads committees having the necessary resources and expertise both to select roads to be upgraded and to accomplish the task, there is little doubt that the project purpose of upgrading 1400 kilometers of communal (nonnational) rural roads will be achieved and that lasting, well functioning rural roads institutions capable of analysis, selection and execution of subprojects will continue to function after the termination of this project -- the last because the project seeks not so much to create new institutions as to build and improve local grass roots organizations of long standing.

D. Summary Findings

Based on the analyses contained in the PP, the project committee has concluded that the project is technically, financially, socially and economically sound. The committee, therefore, recommends that a loan be authorized to the Government of Paraguay in an amount not to exceed $5.2 million.

The project meets all applicable statutory criteria (see Annex III). The USAID Mission Director has certified that the Government of Paraguay has the capability to effectively maintain and utilize the project (see Annex III).

E. Project Issues

The specific issues raised at the time of the DAEC review of the Interim Report have been addressed in the following sections of the PP (see Annex A for a copy of the DAEC cable):

1. Project Strategy - see Part II.A.2.c.
2. Institutional Analysis - see Part IV.A.
3. Road Committee System - see Parts II.B.6., III.C.2., IV.A., and Annex VI
4. Road Conscription Fee - see Parts III.C.3., IV.A., and Annex VI
5. Subproject Selection Criteria - see Part III.D.5.
6. Appropriate Technology Mix - see Part III.A.
7. Recurring Costs - see Parts II.B.6., and III.C.4.
8. Mission Involvement - see Part IV.C.
9. Other Donor Coordination - see Part II.A.4.

F. Rural Roads Project Committee

USAID/Paraguay

Henry L. Miles, Capital Development Officer, Chairperson
Michael H. Hirsh, Assistant Capital Development Officer
Dallas Dale Fowler, Engineering
Larry K. Laird, Rural Development
Guillermo Leoz Pane, Engineering
Bernard H. Masters, Program
Jack D. Rosholt, Advisor, Cadastral Project
Rafael Samper, Advisor, Small Farmer Survey

GOP/MOPC

Ing. Busto, Chief, Caminos Vecinales

AID/W

Brook Greene, Ag. Economist, LA/DR
Kevin Kelly, Finance Officer, LA/DR
Ben Severn, Economist, LA/DR

Reviewed by: Paul A. Montavon, Assistant Director

Approved by: Abe M. Peña, Director

II. BACKGROUND AND DETAILED DESCRIPTION

A. Project Background

1. Background

The Agriculture Sector Assessment and other documents have identified the inadequate rural roads system in Paraguay as one of the major factors limiting development of the small farm sector. One result of the poor rural road network is high transportation costs for small farmers and corresponding high handling costs for the buyers. Poor transportation also limits the small farmer's access to the accurate and timely information needed to make basic production decisions which reflect the demands of the market, and creates a situation in which the small farmer tends to practice "risk aversion" by producing only what is needed for the family. These factors, in addition to several others indirectly related to the rural road system (e.g., poor storage facilities), have acted as disincentives for small farmers to emerge from near subsistence farming to operating productive farm enterprises.

The proposed Rural Roads project is designed to address some of the constraints imposed by the existing rural road system. Initially, the Mission had proposed the FY 1977 Small Farmer Subsector project which included a rural roads component as well as construction of crop storage facilities to address other marketing constraints. Following the PRP review in December 1975, only the roads portion of the project was approved for further development. An interim report was prepared and submitted in December 1976, detailing the implementing mechanisms and institutional capabilities of the GOP organizations expected to participate in the project. Comments provided following the DAEC review have served as the basis for intensive review and preparation of this project paper.

2. Priority and Relevance

a. Economic Setting

The agriculture sector in Paraguay provides approximately 36 percent of GDP, 85 percent of the value of exports and 51 percent of employment. The growth of the sector in the 1970-1974 period (5.9 percent annually) was reasonably good in comparison with the poor growth of the domestic manufacturing sector--which is limited both by the size of the domestic market (population in 1976 was 2.7 million) and the advanced stage of industrialization in the neighboring countries of Argentina and Brazil. In addition to the slow growth of the manufacturing sector, two reasons that the continued expansion of agricultural production is important to Paraguay's economic growth are: (1) the more dynamic segment of the manufacturing sector is engaged in processing agricultural products for export, and (2) since the agriculture sector is the major source of employment in Paraguay, the growth of domestic

demand for locally manufactured commodities is closely tied to the development of the agriculture sector. Thus, the strategy of emphasizing agricultural development is not a substitute for industrial development but rather is a necessary condition for development of both export-linked industry and manufacturing for domestic consumption.

The 1976 Agriculture Sector Assessment points out that the extent of small farmer participation in the future growth of the sector depends upon Paraguay's ability to expand production for exports and to expand the domestic market. With respect to participating in production for export, the data indicate there is no reason to believe small farmers are excluded. As the following table shows, subsistence crops such as cassava and corn are grown without regard to farm size. Although rice production lends itself to mechanization, a significant number of small farms are involved in its production, and for export crops such as soybeans, cotton and tobacco, small farmer production also contributes a significant amount.

DISTRIBUTION OF PRODUCTION OF SELECTED
CROPS BY SIZE OF FARM 1972/73 CROP YEAR
(by percentage of total production)

Crop Production	600+ Has.	51 to 600 Has.	10 to 51 Has.	1 to 10 Has.	Less than 1 Ha.	0-20 Has. (Estim.)
1. Corn	3.8	15.2	25.7	32.0	23.2	(70.6)
2. Cassava	2.2	12.8	37.8	44.6	2.5	(79.3)
3. Irrigated Rice	33.0	39.7	11.8	15.5	-	(22.6)
4. Cotton	6.2	25.4	23.0	38.4	6.9	(59.1)
5. Tobacco	0.6	8.5	48.8	40.8	1.8	(71.5)
6. Sugar Cane for sugar	5.5	25.6	15.0	51.9	2.0	(62.9)
7. Soybeans	24.3	40.8	20.9	13.5	0.4	(26.4)

Although increasing amounts of land have been put under cultivation (particularly under the colonization programs) as the principal means for increasing production, the ability of the small farmer to participate in an expanding export market comes into question if this continues to be the basic form of growth in output. Analysis of available data indicates that insufficient labor-saving technology, infrastructure, and marketing facilities are major reasons why farmers continue to cultivate small plots despite the availability of virgin lands suitable for cultivation (present estimates indicate that there are 8.8 million hectares suitable for cropping, and only 953,000 being used). In fact, a large number of farms under 20 hectares already contain unused land--a primary cause being insufficient labor to expand cultivation. An additional consideration is the low level of productivity in the Paraguayan agriculture sector. Since the level

of output and earnings of farm labor is dependent upon the technologies used in production, improved technology is needed not only to improve production yields but also to make the return to labor sufficiently high to create incentives which will attract the necessary labor, both family and hired, to agriculture.

A final consideration to the expansion of small farmer production is the need to provide remunerative and stable prices to producers. Developing the domestic market with its small population and its primarily rural setting (other than Asuncion only six towns have populations greater than 10,000) necessitates an expansion of production which is carefully coordinated with demand. In the export market, Paraguay's geographic location and subsequently higher transportation costs place the Paraguayan farmer at a competitive disadvantage with producers in countries with lower transportation costs. Thus, to compensate for this situation, production must focus on high value products (usually perishables) which can be processed, or partially processed, within the country.

The built-in disadvantage in marketing costs incurred by exports and the close relationship between economic and export growth suggest that Paraguay can ill afford inefficiencies in its internal marketing system. A functioning rural road system which improves the transportation of small farmer production to the market is important in reducing such inefficiencies. Also, the limits of the domestic market require careful organization of production if local marketing opportunities are to be exploited. Improved rural roads, by facilitating the flow of information to the small farmer as well as transportation to the market, will be an important factor in organizing production.

b. Constraints to Increased Agricultural Production

A number of constraints affecting the production of the target small farmers have been identified in the Agriculture Sector Assessment. The following is a brief review of these constraints.

(1) Technology

The low level of production per agricultural worker and the unused land on a number of small farms infers the need to extend new technologies to the small farmers. Differing technologies must be adapted to the specific needs of the target group. Appropriate labor saving technology must be developed for the labor-short farms larger than five hectares and land intensive cropping practices must be developed for the land-short farms of less than five hectares. Closely related to the development of appripriate technologies is delivering these technologies through the extension system.

(2) Marketing

Three types of marketing problems have been identified: (a) inefficient marketing system; (b) lack of agro-industrial development; and (c) restricted export market. One important result of these marketing problems is price instability which increases production risks and serves as a disincentive to small farmers who might otherwise be encouraged to produce larger volumes of high value commodities (usually perishables).

Highest priority among the marketing problems is given to lack of agribusinesses. Creation of agribusinesses would improve marketing efficiency by expanding and stabilizing the market for high-value perishable commodities. Priority is also given to reducing constraints which contribute to overall inefficiencies, including lack of storage and drying facilities in the countryside, low volume operations of assemblers, and lack of coordinating supply with demand in the domestic market.

(3) Labor and Land Utilization

As mentioned previously, farms with less than five hectares appear to be "land-short", whereas larger farms tend to be "labor-short". In the former case, labor intensive, high value crops are needed to increase land productivity; in the latter, labor-saving technology is needed for increased labor productivity.

(4) Capital and Credit

Small farmers exhibit low levels of investment per hectare. There is some evidence that lack of credit availability has restricted increased capitalization. As new technologies become available, it is clear that credit will be necessary to finance the capital expenditures required. The CREDICOOP project ($3.0 million loan and a companion grant for technical assistance and budget support) is having success in making production credit available to small farmers; however, institutional constraints (e.g., relative lack of rural organizations such as cooperatives) may limit the coverage in this area

in future years, and lack of institutional production credit may continue being a major constraint.

(5) Roads

Insufficient roads contribute significantly to high transportation and marketing costs because the access to market or point of sale is limited--often at critical times in the agricultural year. While an insufficient all weather road system is a general problem, an inadequate secondary access road system is a major constraint to the target small farmers. Inadequate rural roads isolate small farmers, making unfeasible visits to their farms by crop buyers, input salesman, cooperative promoters and extension agents. The restriction of buyers lessens competition for purchase of crops and results in lower prices to the farmers. The restriction of salesmen, extension agents, coop promoters and others lessens the farmer's access to their services. This situation provides little incentive for the farmer to expand his production of cash crops. Rather, he is encouraged to be conservative, to limit his cash crops to the amount he is fairly certain he can deliver to a truckable road in his oxcart without spoilage.

One contributing factor to the farmer's high transportation costs is the time required to transport his products to the point where they can be sold (i.e., to a truckable road or to the market). Time spent transporting production reduces labor availability which, as has been pointed out, is already a constraint facing many in the small farmer target group, particularly at harvest times.

c. Strategy

The USAID/Paraguay program has been designed to respond to each of the above constraints. The $2.5 million Rural Enterprises project, approved in FY 1976, addresses the marketing constraints imposed by the lack of rural agribusinesses. Selection criteria have been established which assure that agribusinesses participating in that project impact on the small farmer target group.

The $3.0 million CREDICOOP loan, mentioned previously, is assisting the credit union movement in rural Paraguay. The CREDICOOP project provides production credit, technical assistance and marketing services to small farmers through rural credit cooperatives. Twenty-six cooperatives have been established, 11 in the area of this project. Most of the credit unions are supported by an extension office of MINAG which has a total of 73 extension agents in the project area. In addition, this area contains 11 branches of the National Development Bank which lend to small farmers directly and also through their credit unions. A second AID project expected to facilitate production resources to small farmers is the Productive Credit Guaranty Program (PCGP) which will begin operation in FY 1978.

The $2.3 million cadaster project is producing information about the small farmers which will be of assistance to the government for developing programs to meet the specific needs of small farmers. This information already has stimulated the agrarian reform institute to reassess its procedures for handling land titles. Although lack of land titles is not a major constraint to the small farmers now, it could be in the future as the price of land increases because only about 50 percent of small farmers have titles to their farms.

In FY 1978, a $5.8 million Market Town Development Project will be submitted for authorization. This project will address marketing constraints faced by small farmers, including the inadequate rural roads network. Subprojects under the loan are expected to include financing of market town infrastructure including road equipment for municipalities. There will be no duplication of effort between the two projects, however, since subloans for road equipment under the Market Town project will be restricted to municipalities outside the Rural Roads project area.

The Mission is developing a Small Farmer Sector project to address the technology constraint. It will be submitted in late FY 1978 or FY 1979 and will be devoted to finding and diffusing technologies appropriate for the small farmer in Paraguay. Two FY 1979 grant PIDs have been approved which are directed at improving the GOP's capacity to provide marketing information and other marketing assistance to small farmers and to market specific small farmer products.

The proposed Rural Roads project is designed to focus specifically on the constraints imposed on small farmers by the lack of adequate roads in the rural areas. While this project does not duplicate any ongoing or proposed USAID project, its complementarity to the activities being undertaken is obvious. It will facilitate the promotion and operation of credit cooperatives and increase the participation of members in cooperative activities, make investments in agribusinesses in the project area more attractive which in some cases will require towns to provide infrastructure to support the business; and the project will enable technicians from credit institutions, the extension service, research institutions, the cadaster office and other agencies to make visits to small farms by motor vehicle rather than by trail motorcycle, by horse or by foot. Consequently, the road project will multiply the benefits to be generated by CREDICOOP, Rural Enterprises, PCGP, and Market Town projects in the minifundia zone.

A system currently exists within the GOP which is responsible for the development and maintenance of rural roads (for a full discussion, see Parts II.A.3., II.B.6. and IV.A.). At the national level, the Ministry of Public Works and Communications (MOPC) administers the rural roads system through its General Directorate of Road Committees (GDRC). The key feature of the system is the reliance on local level

inputs for its operation. The roads committee system begins at the community level with the Local Road Committee (LRC) and Road Promotion Committees (RPCs) which, in the majority of cases, are the sources of requests for assistance on a road project. Such requests come to the LRC from RPCs and members of the community who have an interest in obtaining assistance for a specific project. The requests are then channeled to the Regional Road Committee (RRC) which has jurisdiction over the area in question. Requests are acted upon when resources are available; i.e., from the small equipment pool of the GDRC and funds and labor provided through collection of the conscription fee (see Part III.C.3.g. and Annex VI).

At the top of this system is the GDRC. Its function is to administer and provide guidance to the RRCs and LRCs. However, it lacks the technical capability and resources to manage the system efficiently and, as a result, has become ineffective as an institution. The strategy of this project flows from the "grass roots" nature of the road committee system which assures the participation of local communities in the planning and decision making process; it is a feature that the Mission considers important to maintain and strengthen. Specifically, the project will improve the institutional and technical capability of the road committees (particularly the RRCs) and will also establish a new unit within the MOPC to coordinate and administer the inputs of the project. The new unit will be located legally under the Minister's office, but in practice the unit will work under the direction of DR which has the technical capability and the resources necessary to manage the rural roads system effectively. Because the existing local institutional framework will be continued and strengthened, direct participation of the target group will be guaranteed.

3. Road System Overview

According to GOP figures, the national road network in Paraguay totals approximately 7,500 kilometers (see following table for a breakout). These roads are improved and maintained with government budget funds.

A second group, community roads, do not belong to the national road network and no inventory has been made of them. The MOPC has estimated their total length to be not less than 5,000, but probably not more than 7,000 kilometers. These community roads came into being through a combination of efforts by individuals and institutions, public and private. In most cases, the roads exist mainly due to strong local initiatives and also due to political considerations that permitted local communities access to higher lines of authority in the country. At best, the process that a rural community must follow to obtain support for a local road is makeshift. One easily identifiable common thread

NATIONAL ROAD NETWORK - KM (1975)

Department	Asphalt	Gravel	Earth	Total	%
1. Concepción	-	106.0	301.0	407.0	5.4
2. San Pedro	-	52.0	556.0	608.0	8.2
3. Cordillera	71.0	90.0	132.0	293.0	3.9
4. Guairá	22.0	18.0	172.0	212.0	2.8
5. Caaguazú	178.0	-	291.0	469.0	6.3
6. Caazapá	-	-	272.0	272.0	3.6
7. Itapúa	82.0	37.0	325.0	444.0	5.9
8. Misiones	128.0	2.0	209.0	339.0	4.5
9. Paraguarí	150.9	99.9	340.0	590.8	7.9
10. Alto Paraná	87.0	-	263.0	350.0	4.7
11. Central	173.2	129.1	233.0	535.3	7.2
12. Ñeembucú	-	-	402.6	402.6	5.4
13. Amambay	-	48.0	185.0	233.0	3.1
14. Canendiyú	-	-	458.0	458.0	6.2
15. Presidente Hayes	11.9	-	866.0	877.9	11.7
16. Alto Paraguay	-	-	20.0	20.0	0.3
17. Chaco	-	-	48.0	48.0	0.6
18. Nueva Asunción	-	-	255.0	255.0	3.4
19. Boquerón	-	-	127.4	127.4	1.7
Between Departments	-	-	535.0	535.0	7.2
	905.0	582.0	5,990.0	7,477.0	100.0

The above table includes only those dirt roads belonging to the national road network.

in this process, however, has been relatively substantial local community contributions. Considerable amounts of labor, material and fuel are contributed by the benefiting communities toward the construction of rural roads.

Typical of the institutions that involve themselves in the development of this vast rural road network are the Army Corps of Engineers, the sugar industry, municipalities, the National Land Reform Agency and colonies. However, these institutions have been traditionally interested in particular locations in the country at particular times, consistent with their special needs. The GOP has been, and remains, the primary mover in the development and maintenance of rural access roads operating through its Ministry of Public Works and Communications (MOPC). The MOPC has two directorates with responsibilities for the planning, design, construction and maintenance of all levels of the national road system in Paraguay. These are the Directorate of Roads (DR) and the General Directorate of Road Committees (GDRC).

The DR has the basic responsibility of the national and interdepartmental road network in the country. In addition to the central office in Asuncion, the DR has established five districts in the country to cover highway construction and maintenance (see Annex IV, Exhibit 1). The majority of the DR construction and maintenance crews work out of these district offices. The DR also opens and maintains rural roads at the request of interested local parties and upon the approval of the Minister of MOPC. Involvement in these activities is generally limited to areas in which equipment and personnel are already carrying out maintenance tasks on the national road system.

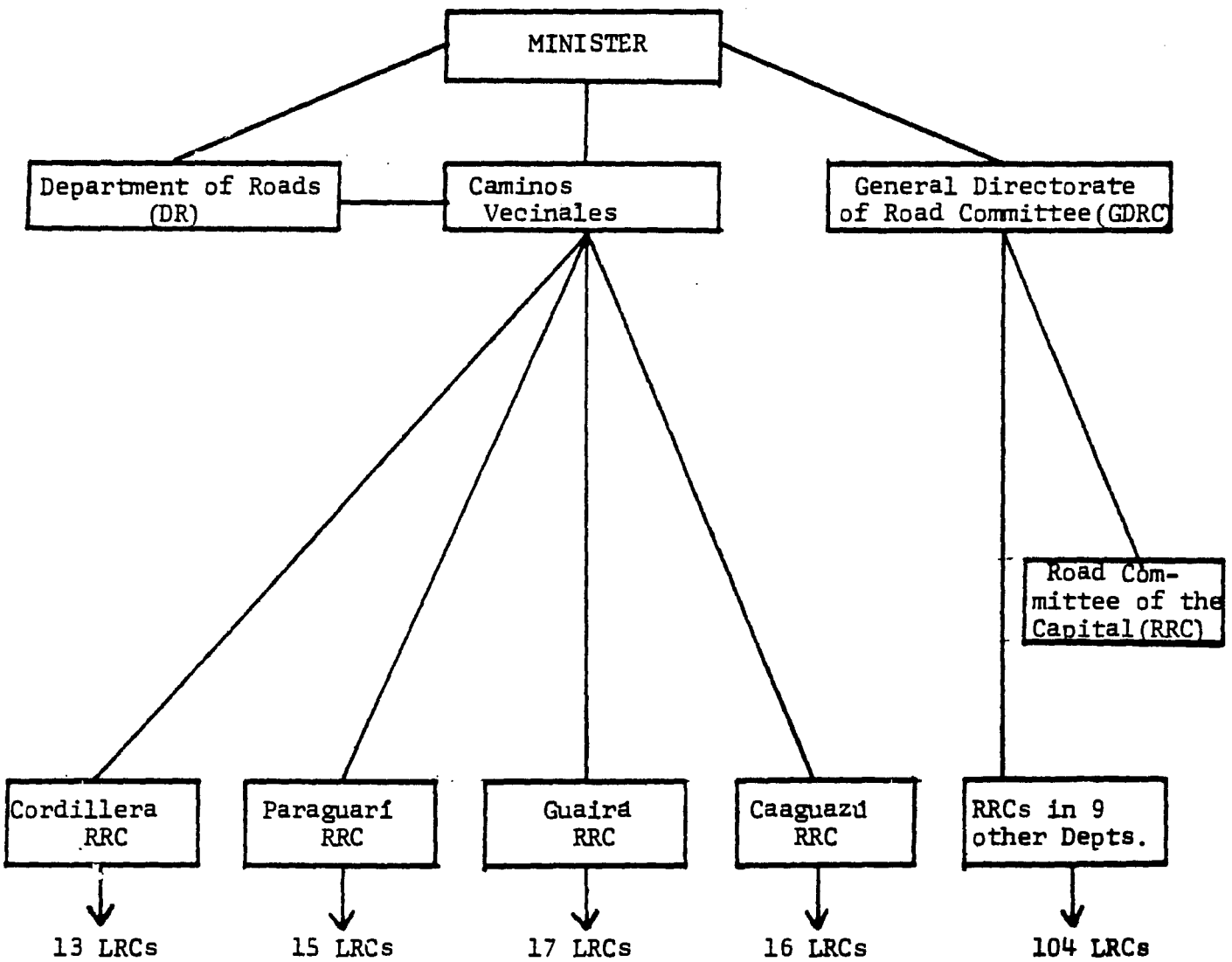
The GDRC was established in the MOPC to implement the road committee system--the national system of local and regional road committees and the road conscription service. Set up to build and maintain roads which are not part of the national road system, the system relies on community inputs of cash, materials and labor for its support. The operational offices of the road committee system are the Regional Road Committees (RRCs) in the capital of each department, and the Local Road Committees (LRCs) in most of the larger communities in each department. At the national level, the GDRC provides direction and support to this system. The following organizational chart illustrates the MOPC structure as it relates to the project area.

Over the past several years, the DR has received assistance from the World Bank which has strengthened its operational and technical capacity. On the other hand, the GDRC has remained a smal and relatively weak organization, and coordination between the two h been poor. One recommendation of a World Bank study conducted in 19 was that the two be merged into a single directorate, 1/ but this requires a change in legislation and the MOPC is reluctant to send t recommendation to Congress without an accompanying in-depth study of the secondary road system.

1/ World Bank, "Estudio Integral del Transporte, Informe Final," Part I, July, 1973, p.25.

STRUCTURE OF THE ROAD COMMITTEE SYSTEM FOR THE RURAL ROADS PROJECT

Ministry of Public Works
and Communications (MOPC)



RRCs = Regional Road Committees
LRCs = Local Road Committees

During intensive review for this project, however, the MOPC determined that because of the technical capability of the DR in equipment procurement, operation and maintenance, engineering design, and overall administration, it would be appropriate to transfer on a pilot basis the road committee system in the four project departments from the GDRC to the DR. Then the general counsel of the MOPC formulated the legal arrangements for the transfer. The unit legally will report directly to the Minister of MOPC but in practice will report to DR. The legal transfer of the new unit, Caminos Vecinales, to DR will require a change in the legislation of the MOPC and will take place sometime after the overall institutional study, scheduled for the project's third year, is completed. Transfer of the remaining departments to DR will also await the results of the study. The GDRC will continue to have responsibility for the committee system in the nine remaining departments of eastern Paraguay. (A full discussion of this institutional arrangement and how it will function can be found in Part II.B.6.). The strategy of the project, therefore, is to draw upon the strengths of both the road committee and the DR. Should this arrangement prove to be efficient, it will enhance the prospects for a total merger of the DR and GDRC.

4. Other Donor Programs

Other donor assistance to the road system in Paraguay has come exclusively from the World Bank/International Development Association (IDA). Thus far, two loans totaling $20.5 million have financed equipment, spare parts, training (in-service and third country) for various phases of road maintenance administration, operations and preventive maintenance, engineering training, and technical assistance for program administration and operation. The first loan was completely disbursed in 1975, and the second is scheduled to be disbursed in 1979. A third loan is currently under consideration for 1979.

In each case, these loans have been to strengthen the DR--no resources have been focused on the GDRC. While not all training objectives have been reached, the DR has become a reasonably efficient organization. Its program is well administered and an effective equipment maintenance system has been established. Equipment financed under the second loan has been used for road construction in colonization projects, and the proposed third loan will also support rural development activities in the central and eastern parts of Paraguay.

Because of the effective maintenance system which has been established in DR, little emphasis has been placed on equipment maintenance and there are no provisions in the project for assistance in this area. It is recognized, however, that coordination with the ongoing and proposed World Bank projects is necessary to assure that provisions will be made in them to accommodate the maintenance requirements of the equipment procured under this loan. Toward this end and upon the authorization of the project, the Mission will send a letter to the World Bank, regarding the need to coordinate our assistance efforts.

B. Logical Framework and Detailed Description

Introduction - This section contains the logical framework in addition to the regular content of the description section.

1. Sector Goal

This program is directed to improving the standard of living of small farmers in the minifundia area. The great majority of these farmers have an average per capita income of $154 per year and have extremely limited access to social services such as schools, health clinics, credit, cooperatives and agricultural extension. The rural roads project will contribute to this goal by increasing per capita income 5% over the life of the project and by increasing access to social services. The increase in income will occur as a result of higher prices of agricultural products due to decreased transportation costs; increased areas under cultivation due to improved accessibility to labor markets; and increased productivity due to improved farming practices.

Aside from increases in per capita income this project will improve the quality of life for the small farmer and his family in that he will be able to avail himself more readily of social services such as schools and health clinics.

Other projects directed to this goal are the Rural Enterprises project, which addresses marketing constraints; the CREDICOOP project which provides production credit, technical assistance and marketing services to small farmers; and the Productive Credit Guaranty program which will generate production resources to small farmers.

2. Purpose

The purpose of this project is to improve farm to market roads in the minifundia region. A related purpose is to increase the capability of Paraguayan institutions to construct, improve and maintain rural roads.

3. End of Project Status

With the expansion and training of the local institutions responsible for nonnational rural roads and with the provision to them of the necessary resources, including road construction equipment, materials and finances, 1400 km of carefully selected segments of the farm to market road network will be improved. In addition there will be in place institutions having the technical and financial resources capable of maintaining and improving the rural roads network.

4. Important Assumptions

The basic assumption is that the primitive state of the farm to market roads is a major constraint to improving the production and income of the small Paraguayan farmer. Moreover this constraint is further exacerbated by Paraguay's geographic location which places all Paraguayan farmers at a competitive disadvantage in the international market. The basic assumption is supported by the data extracted from the Small Farmer Survey. Other crucial assumptions are listed in the logical framework.

5. Planned Outputs

This program projects an expansion and intensive training of personnel in the Directorate of Roads, Regional Road Committees, Local Road Committees and Road Promotion Committees. With the provision of road equipment and building materials it is expected that increased numbers of requests for subprojects will be received since the road committees will have the capability to up grade and maintain many more kilometers of roads than previously.

6. Inputs

The $5.2 million AID loan will finance road construction equipment, construction materials, technical assistance and a study to determine the best institutional management for constructing and maintaining rural roads.

The GOP will provide $2,425 million in counterpart for fuel, wages, equipment maintenance, materials for culverts and bridges, office equipment and overhead.

Local communities will provide $715,000 for labor, fuel and construction materials.

7. Logical Framework

The logical framework begins on the following page.

D 1020-28 (7-71)
PPLEMENT I

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

(INSTRUCTION: THIS IS AN OPTIONAL FORM WHICH CAN BE USED AS AN AID TO ORGANIZING DATA FOR THE PAR REPORT. IT NEED NOT BE RETAINED OR SUBMITTED.)

Life of Project:
From FY 78 to FY 82
Total U.S. Funding $5,200
Date Prepared: 1/3/78

oject Title & Number: RURAL ROADS - 526-0111

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
rogram or Sector Goal: The broader objective to hich this project contributes: To increase the net income of small farmersand their access to agricultural and social services.	Measures of Goal Achievement: 1. Increase in average per capita income of 5% over life of project 2. Reduction ton/km. cost of $1.50. 3. Reduction of time required to transport products to the points where they can be marketed. 4. Decrease in number of days roads are closed. 5. Increase in agricultural production either through increased area under cultivation or higher yields. 6. Increased frequency of truck and bus service.	Survey of small farmers.	Assumptions for achieving goal targets: 1. Lack of improved and well maintained rural roads is a major constraint to improving agricultural production and income among small farmers. 2. Decrease in transportation costs will accrue primarily to small farmers rather than to truckers, middlemen or consumers. 3. Benefits to farmers from improved roads will be of sufficient magnitude to induce behavioral changes in small farmers affected and will lead to increased output. 4. Farmers will, if necessary, hire labor to raise output. 5. Prices for small farmer products remain stable. 6. International lending agencies continue their support of credit and extension services. 7. GOP will progressively increase program assisting small farmers. 8. Small farmers presently use ox carts for farm to market transport and that 80% of these farmers will use trucks as a result of improved roads.

AID 1020-28 (7-71)
SUPPLEMENT I

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 78 to FY 82
Total U.S. Funding $5,200
Date Prepared: 1/3/78

Project Title & Number: RURAL ROADS - 526-0111

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Project Purpose:	Conditions that will indicate purpose has been achieved: End of project status.		Assumptions for achieving purpose:
1. To improve farm to market roads in selected minifundia areas.	1.a. A total of 1,400 kilometers of farm to market roads constructed, upgraded or repaired. 1st. year 216 km. 2nd. year 552 km. 3rd. year 632 km.	1. Records of DR, field inspections, reports.	1. Small farmers will increase their contribution to MOPC for road improvement and maintenance.
2. To improve the capability of Paraguayan institutions to construct, improve and maintain rural roads.	b. All roads constructed are properly maintained. 2. Existing system provides for continuation and expansion. a. All rural roads institutions fully staffed and operational. Capable of analysis, selection, construction and maintenance of rural roads without outside assistance. b. Improved administration of the conscription law.	2. Field inspections, reports, and records.	2. Improved administration of tax collection and use.
			1. Provision of technical assistance and selection criteria to regional and local committees by the DR will not adversely affect their democratic and responsive character.

AID 1020-28 (7-71)
SUPPLEMENT I

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 78 to FY 82
Total U.S. Funding $5,200
Date Prepared: 1/3/78

Project Title & Number: RURAL ROADS - 526-0111

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS					MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Outputs:	Magnitude of Outputs:	FYs. 79	80	81	82		Assumptions for achieving outputs:
1. Trained personnel added to existing rural road committees.	1.					1. Inspection and monitoring by project manager.	1. Demand for labor at Itaipú and Yacyretá will not draw-away workers needed in road program.
a. Regional Road Committees	a.	16	-	-	-	2. Monthly project reports from Caminos Vecinales.	
b. Local Road Committees	b.	-	61	-	-		
c. Road Promotion Committees	c.	-	-	61	-		2. Qualified employees needed to staff regional road committees will be willing to live in rural areas.
2. New road committees formed and operating.	2.						
a. Additional Local Road Committ.	a.	6	6	-	-		3. Secondary road inventory to be undertaken by MOPC will be completed by FY 81.
b. New Road Promotion Committees	b.	61	61	-	-		
3. Number of requests for assistance on road projects received.	3.	305	366	427	427		
4. An administrative study to examine the entire roads system completed.	4.	-	-	1	-		
5. Number of seminars to promote the project and to sensitize the small farmers.	5.						
a. Regional	a.	4	4		4		
b. Local	b.	-	10	20	30		

AID 1520-28 (7-71)
SUPPLEMENT I

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 78 to FY 82
Total U. S. Funding $5,200
Date Prepared: 1/3/78

Project Title & Number: RURAL ROADS - 526-0111

NARRATIVE SUMMARY			OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Inputs:	(in $000)		Implementation Target (Type and Quantity)		Assumptions for providing inputs:
1. AID Loan:		5,200	See equipment list and financial section for detailed breakdown.	1. Inspection by project manager.	1. No undue delay in providing and shipping equipment.
-Equipment	3,934			2. USAID records	2. The GOP will continue to have the ability to provide counterpart support.
-Tech. Assistance	300			3. GOP records.	
-Materials	766			4. Regional and local committee records.	3. In labor short areas road construction can be concentrated in agricultural slack season.
-Institutional Analysis	200				
	5,200				
2. Counterpart:		3,140			
a. GOP/MOPC		2,425			
-Fuel and Lubricants	571				
-Equip. Operator's Wages	344				
-Equip. Maintenance	154				
-Vehicle drivers, support labor	226				
-Materials for culverts & bridges	646				
-Office equipment	8				
-MOPC support & overhead	476				
	2,425				
b. Communities		715			
-Labor	415				
-Fuel contribution	150				
-Construction materials	150				
	715				

8. Project Focus

Although the road committee system exists throughout Paraguay, the focus of this project has been limited geographically for two reasons: (a) greater concentration of available resources for maximum impact; and (b) the objective of developing an effective rural roads system within the existing institutional framework will be facilitated and expansion to additional areas can take place later without loss of quality or effectiveness.

Using this rationale as a guide, the four departments of Cordillera, Guairá, Caaguazú and Paraguarí were selected as the project area because they contain the largest concentration of small farmers. (The Central Department initially was considered for inclusion in the project; however, it has now been excluded because it is the department in which Asunción is located and the regional road committee--Road Committee for the Capital, RCC--is more advanced than in other departments, has higher revenues, an administrative staff of 23, and a crew of 18 operators and mechanics for its nine pieces of equipment.) These four departments are located to the east and southeast of Asunción. Data from the 1972 Censo Nacional de Población y Vivienda provide the following information on population make-up and density:

	Total	Urban	Rural	Density/Km^2
Cordillera	194,218	36,913	157,305	39.3
Guairá	123,799	36,352	88,447	41.3
Caaguazú	210,858	33,215	177,643	9.9
Paraguarí	211,977	32,498	179,479	24.3

Another important demographic fact regarding the project area is the out-migration rate. According to La Población de Paraguay, an analysis of recent censuses, the districts in Paraguay with the highest loss of population are within the project area.

Beneficiaries of the project will be the small farmers in these departments who depend on the rural road system for transporting their production to market or to point of sale. A detailed discussion of the target group is contained in the Social Analysis (Part III.B.). In brief, the salient characteristics of the small farmer target group include: (a) size of farm ranging from 0.02 to 9.5 hectares with an average size of 2.15 hectares for farms of less than 5.0 hectares and an average size of 6.99 hectares for farms between 5.0 and 9.9 hectares; (b) production of mandioca, corn, and beans, primarily for onfarm consumption, and cotton, petitgrain, sugar cane, coco-tero and tobacco for cash marketing; and (c) an average 1976 net per capita income of $141 for farms less than five hectares and $195 for farms between 5.0 and 9.9 hectares.

9. Institutional Roles

During the intensive review the project committee examined several different institutional arrangements to determine which would most effectively serve the purposes of the project. A desire shared by the GOP and the Mission is that eventually the entire road system in Paraguay become the responsibility of a single directorate within the MOPC.

At present, two directorates within the Ministry of Public Works and Communications (MOPC), the Directorate of Roads (DR) and the General Directorate of Road Committees (GDRC), are responsible for the national road system and the rural road system, respectively. The institutional arrangement, proposed in the Interim Report to strenghthen the GDRC, was based on the assumption that the DR and GDRC could not be merged in any degree without legislative action. That arrangement would have created parallel responsibilities and capabilities in the two directorates (procurement of road equipment, maintenance) and might have made a merger of the two more difficult in the future. The DAEC raised serious concerns during the review of the Interim Report and directed that the intensive review examine alternative arrangements which would enhance prospects for a merger.

Initially, problems were confronted because the project committee focused upon merging the GDRC with the DR, which was impossible without congressional action. The committee discussed a number of institutional arrangements which attempted to draw upon the strengths of each directorate while involving both in project implementation. In each case, the coordination mechanism required between the two directorates was very cumbersome and not likely to work smoothly. When institutional arrangements were examined in detail, the idea surfaced of setting up a permanent unit directly under the Minister of MOPC to administer this project and to transfer to it the road committees of the four departments selected as the project area. The shifting of the four departments to the new unit, Caminos Vecinales, would be on a pilot basis and the permanent structure for administering the secondary roads network would be based upon the findings of an in-depth evaluative study of the GDRC, the project, and of other organizations working on secondary roads. The study will take place after two years operation of the project, at which time some experience will have been gained with the rural road system in four departments under the direction of Caminos Vecinales. The study will provide the MOPC with a firm basis for requesting Congress to change legislation regarding the administration of the secondary roads network. The institutional arrangements now proposed would also allow for a slow integration of the entire road system into DR should the recommendation be made to consolidate responsibility of the entire road system into one organization.

In summary, an institutional arrangement will be established whereby the rural road system for the four project departments essentially will be transferred to the DR. As mentioned in a previous section, a new unit, Caminos Vecinales, will be established which will have full responsibility for the project and will assure retention of the grass roots, community-participation, feature of the system. The GDRC will continue to have full responsibility for the rural road system in the remaining nine departments of eastern Paraguay.

The following discussion will outline the roles and responsibilities of each organizational unit participating in the project (a detailed institutional analysis of each, including the MOPC and each directorate, is covered in Part IV.A.). The following charts present the organizational schema of the project and should be referred to in conjunction with the discussion.

a. Caminos Vecinales

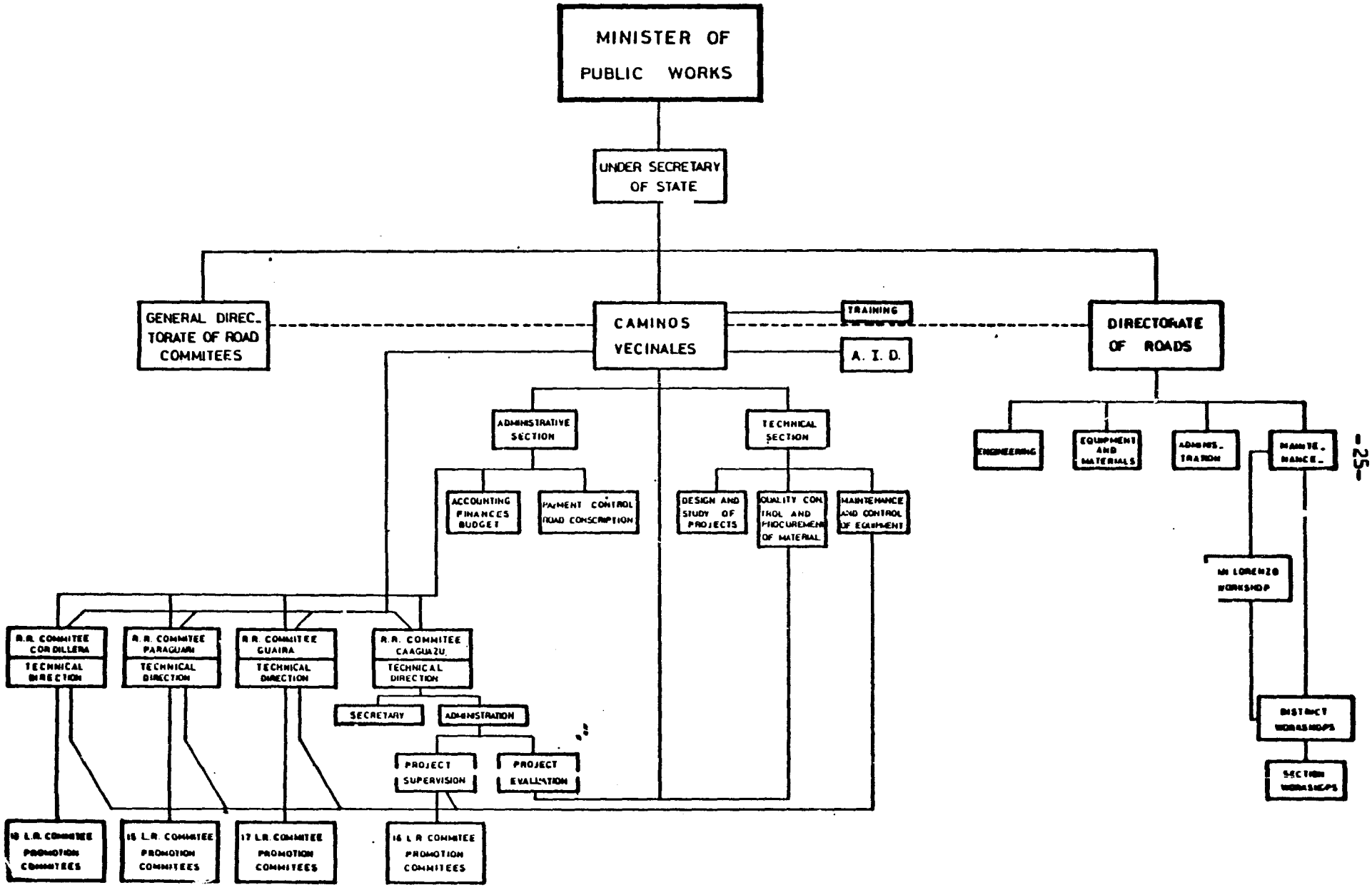
Caminos Vecinales (CV) is the new organizational unit to be created for the specific purpose of administering this project. As can be seen in the organization chart, CV, in practice, will report to the director of DR. This structure permits direct coordination with DR departments which already have considerable expertise in engineering and design, equipment procurement and maintenance, and warehousing of spare parts. Drawing upon the expertise already in existence eliminates the need to develop that capacity as part of the project.

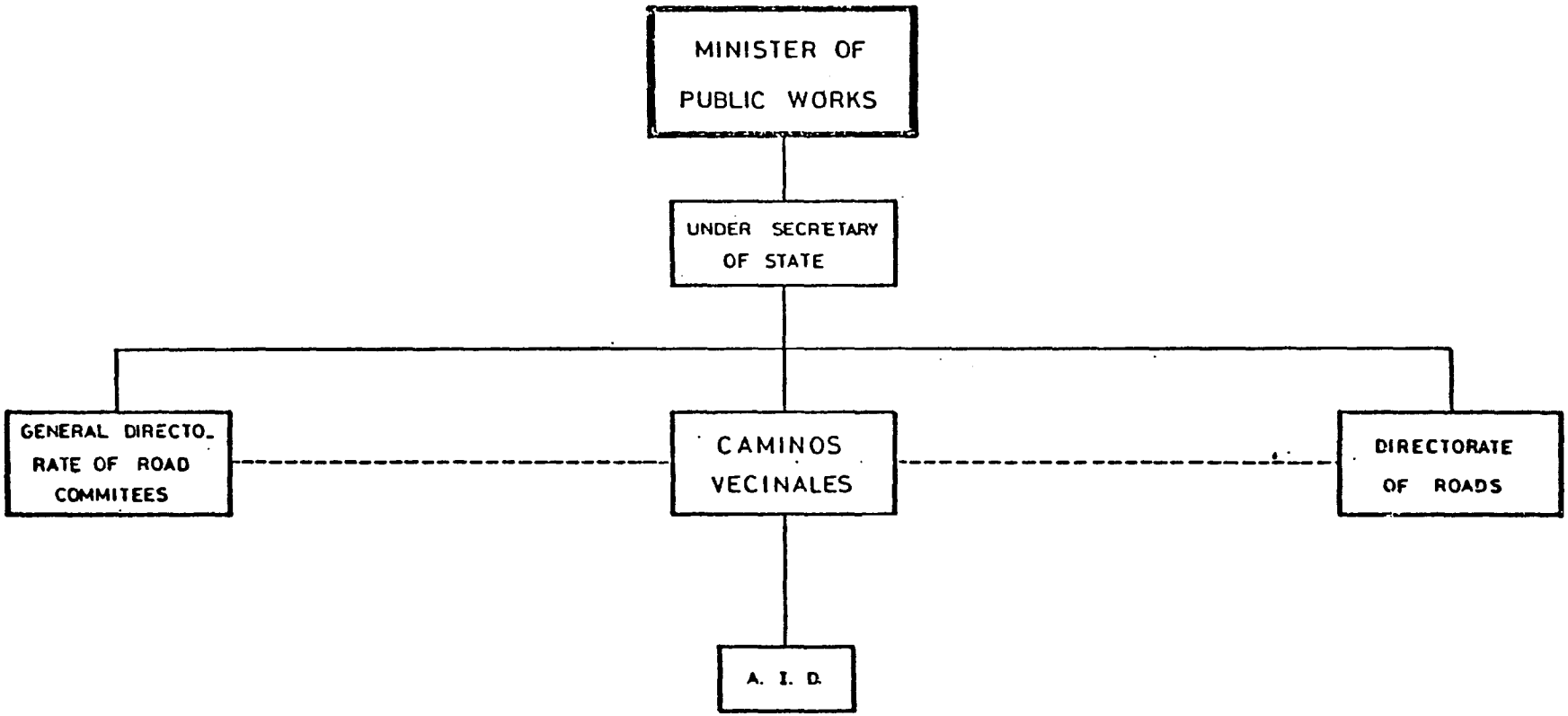
Caminos Vecinales will have a director's office and two sections: administrative and technical.

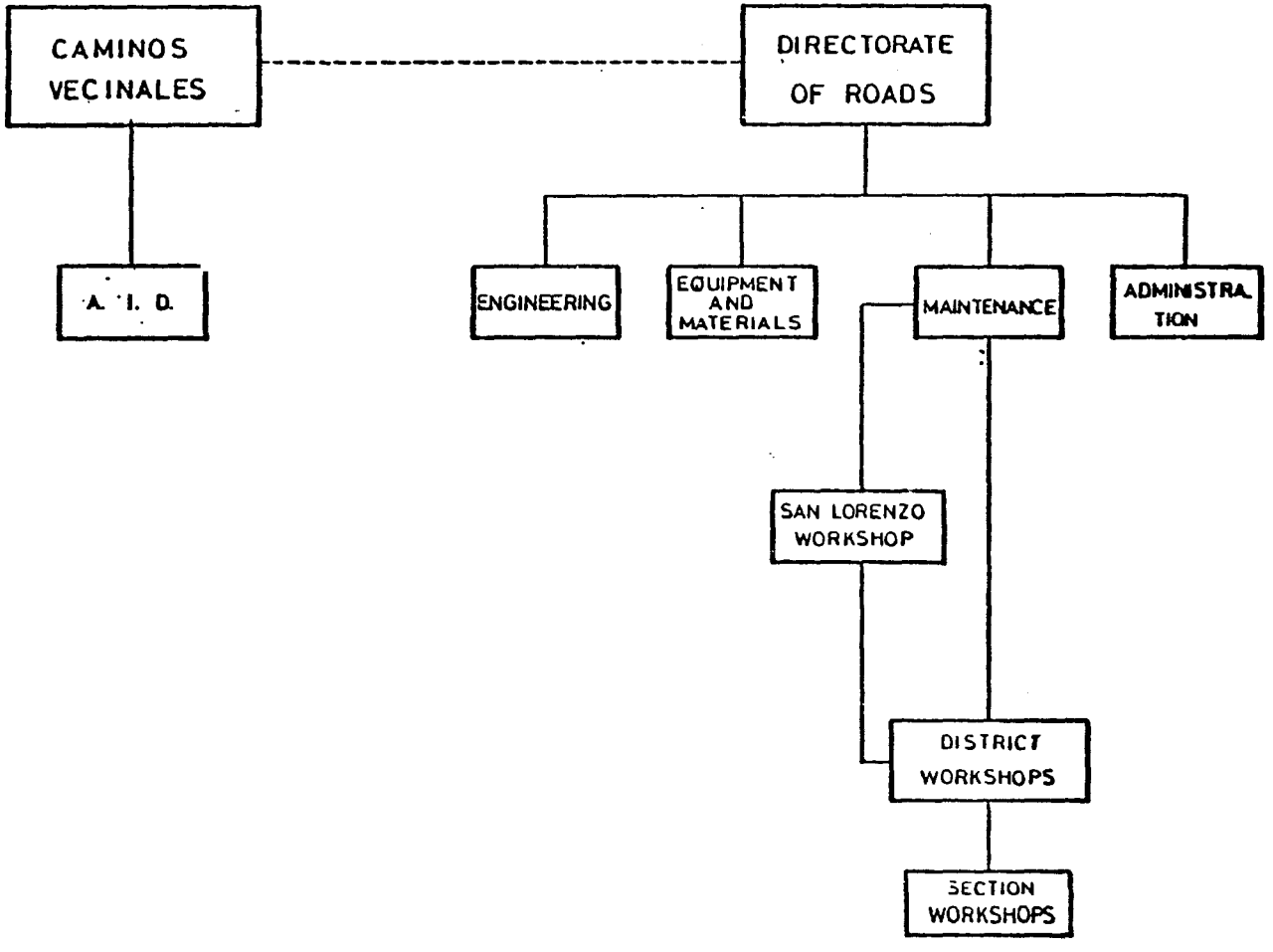
(1) Director's Office

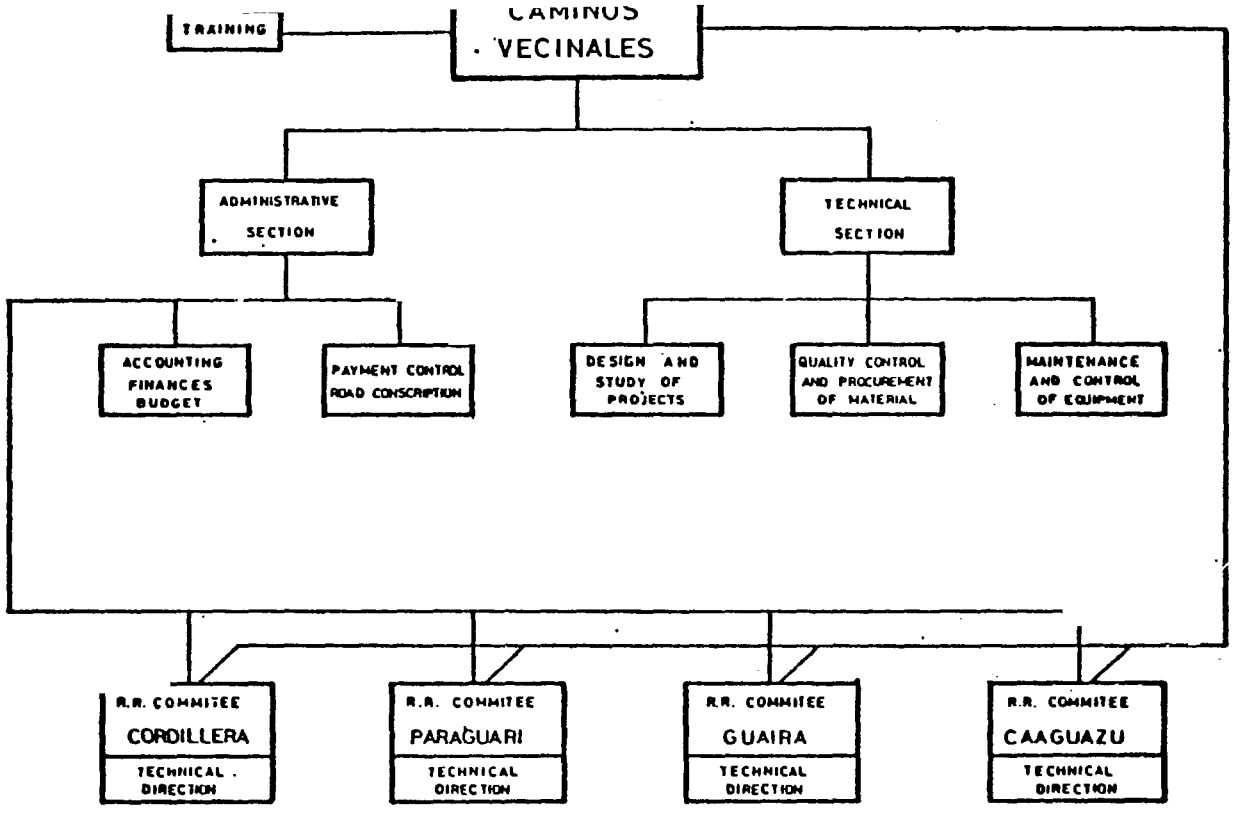
This office will have overall responsibility for the project. Duties of the office will include: controlling project funds, reviewing progress of work in the field (including ensuring local and regional participation in identifying, screening and selecting potential subprojects and ensuring that subprojects selected meet established criteria), coordinating with other departments in DR and with the road committees, developing operations manuals, supervising CV employees, including recruitment and training, and providing technical assistance to road committees.

The director will have a special assistant attached to his office who will be responsible for training. The assistant will probably be an economist so he will be able to work comfortably with the selection criteria and benefit/cost analyses and to train others in their use. He will develop training courses

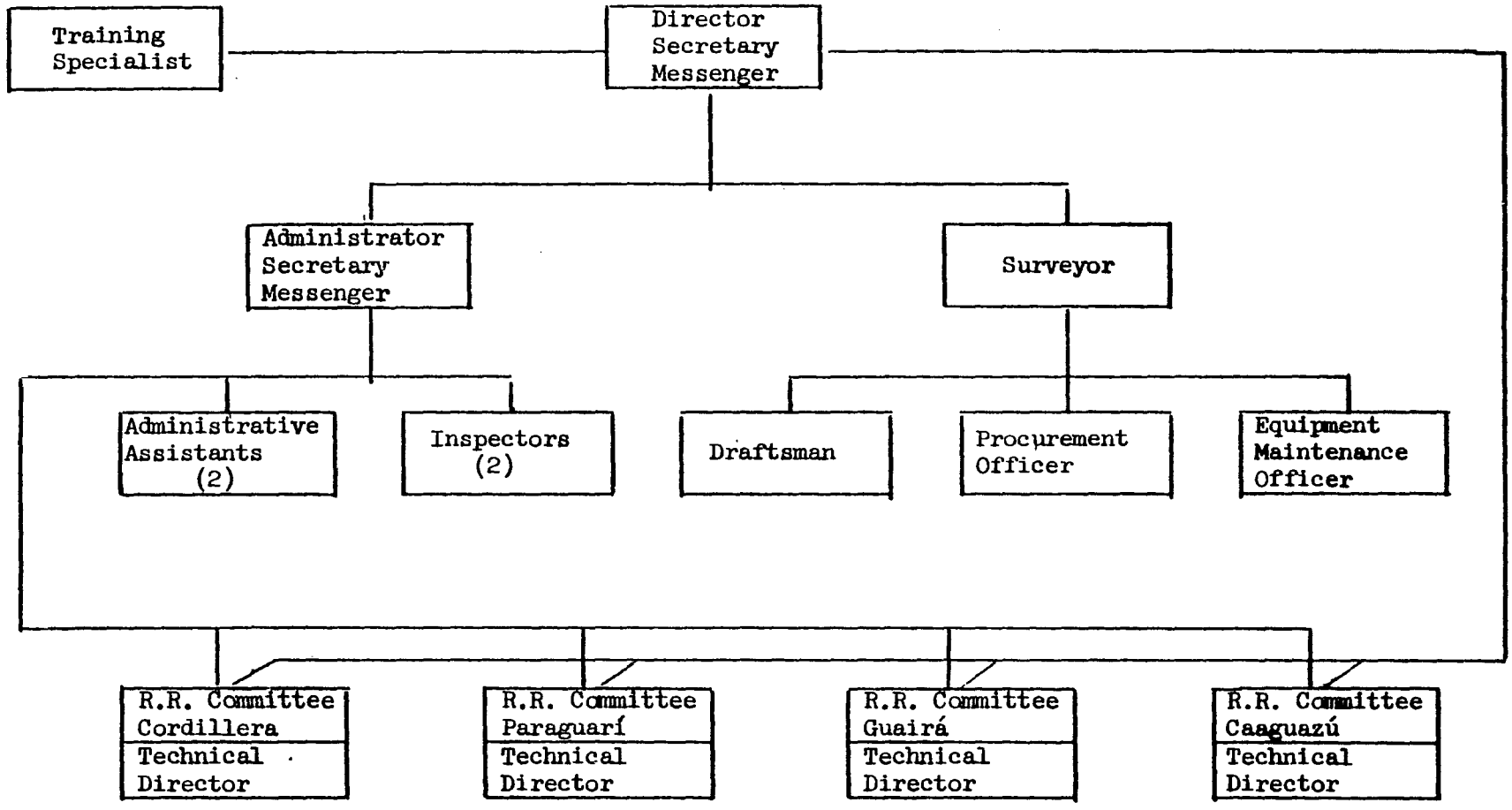

MINISTER OF PUBLIC WORKS
UNDER SECRETARY OF STATE
GENERAL DIREC. TORATE OF ROAD COMMITEES
CAMINOS VECINALES
TRAINING
A. I. D.
DIRECTORATE OF ROADS
ADMINISTRATIVE SECTION
TECHNICAL SECTION
ACCOUNTING FINANCES BUDGET
PAYMENT CONTROL ROAD CONSCRIPTION
DESIGN AND STUDY OF PROJECTS
QUALITY CONTROL AND PROCUREMENT OF MATERIAL
MAINTENANCE AND CONTROL OF EQUIPMENT
ENGINEERING
EQUIPMENT AND MATERIALS
ADMINIS. TRATION
MAINTE. NANCE.
M. LORENZO WORKSHOP
DISTRICT WORKSHOPS
SECTION WORKSHOPS
R.R. COMMITEE CORDILLERA
TECHNICAL DIRECTION
R. R. COMMITEE PARAGUARI
TECHNICAL DIRECTION
R.R. COMMITEE GUAIRA
TECHNICAL DIRECTION
R.R. COMMITEE CAAGUAZU
TECHNICAL DIRECTION
SECRETARY
ADMINISTRATION
PROJECT SUPERVISION
PROJECT EVALUATION
15 L.R. COMMITEE PROMOTION COMMITEES
16 L.R. COMMITEE PROMOTION COMMITEES
17 L.R. COMMITEE PROMOTION COMMITEES
16 L.R. COMMITEE PROMOTION COMMITEES


MINISTER OF PUBLIC WORKS
UNDER SECRETARY OF STATE
GENERAL DIRECTO-RATE OF ROAD COMMITEES
CAMINOS VECINALES
DIRECTORATE OF ROADS
A. I. D.


CAMINOS VECINALES
DIRECTORATE OF ROADS
A. I. D.
ENGINEERING
EQUIPMENT AND MATERIALS
MAINTENANCE
ADMINISTRATION
SAN LORENZO WORKSHOP
DISTRICT WORKSHOPS
SECTION WORKSHOPS


TRAINING
CAMINOS VECINALES
ADMINISTRATIVE SECTION
TECHNICAL SECTION
ACCOUNTING FINANCES BUDGET
PAYMENT CONTROL ROAD CONSCRIPTION
DESIGN AND STUDY OF PROJECTS
QUALITY CONTROL AND PROCUREMENT OF MATERIAL
MAINTENANCE AND CONTROL OF EQUIPMENT
R.R. COMMITEE CORDILLERA
TECHNICAL DIRECTION
R.R. COMMITEE PARAGUARI
TECHNICAL DIRECTION
R.R. COMMITEE GUAIRA
TECHNICAL DIRECTION
R.R. COMMITEE CAAGUAZU
TECHNICAL DIRECTION

ORGANIZATION OF PERMANENT PERSONNEL FOR CAMINOS VECINALES



designed to strengthen the regional and local road committees and to make the road promotion committees permanent entities. At all levels the training will emphasize the importance of road maintenance and methods to assure that a maintenance program is undertaken. The Director of CV has already been selected and has been participating in project design. He is an engineer already on the MOPC staff with five years of experience, including four years working with the rural road committees in the Central Department. In addition to the director, the office will have a training specialist, a secretary and a messenger.

(2) Administrative Section

All administrative chores of the project will be the responsibility of this office. These include accounting of project funds, monitoring operations such as procurement of materials and fuel and their distribution to the project sites, payment of salaries to all project staff, receipt of conscription fees and forwarding them to the Ministry of Finance through the GDRC, and the issuance and distribution of official stamps indicating payment of conscription fees.

This section will have a staff of seven: a director and two assistants who will be responsible for the above tasks; two inspectors who will perform general audit functions at the regional level, including review of accounting methods and collection of conscription fees and recommending improvements; one secretary; and one messenger. The director will be an accountant or have a university degree in administration. Candidates must have a minimum of five years of experience. The assistant positions will be filled by accountants; filling these positions with university students who are studying administration will be considered. The inspectors will be high school graduates who have passed the commercial "cone" in obtaining their degrees.

(3) Technical Section

The primary function of this section will be to provide technical assistance to the RRCs and LRCs and to assist with subproject design when requested by the RRC directors.

Another very important function of this section will be to compile and maintain special maps of the project area for the RRCs and LRCs. Large scale maps at 1:20,000 and 1:50,000 will be used to show the types and locations of all roads and cart trails, the status of work on each road, the location of bottlenecks, and the location of all rural dwellings. These maps will be compatible with cadastral plans showing location and size of landholdings. Maps of each department at 1:200,000 scale will be used to show the location

of equipment, maintenance schedules, location and schedule of roads to be improved or constructed.

The use of these maps by the RRCs and LRCs is a particularly important function because of the need to coordinate the rational/planned development of the rural road network within and between each department, and to coordinate farm road maintenance with the national road system. Some secondary roads are already under the DR maintenance program and the use of these maps will facilitate the transition of the entire rural road network into the overall national road construction/maintenance system. (After the maps of the project area are compiled, this activity could be expanded to include all of the eastern region of the country.)

Other responsibilities of this section will include: (a) the inspection of the quality of materials purchased for subprojects; (b) random evaluation of completed subprojects; and (c) assisting the training specialist in designing appropriate seminars and training courses for the RRC, LRC and RPC members and staffs.

The technical section will have a staff of four. The section chief will be a graduate surveyor with five to ten years experience, who will assist the RRC directors in designing subprojects, as required. He will be assisted by an experienced draftsman, who will draft the plans for the RRCs, and who will assist in keeping the map data current. In addition, two cartographers will be contracted for a period of two years to develop and compile the road maps and to set up the system for using and maintaining them.

b. Regional Road Committees

The Regional Road Committee (RRC) will be the focal point of the project because it will perform the technical review of subprojects and make decisions regarding the use of project resources. The project will develop the technical and administrative capabilities of the RRCs but otherwise will not affect their position or role in the road committee system.

Located in the capital of each department, the RRCs currently are served by a voluntary president (who normally is active in local business and politics). Offices are usually in the president's home but some have rented space. The RRCs also have a salaried secretary and many have inspectors to supervise road projects. Several current responsibilities of the RRCs will remain under the project, including collection of conscription fees from the local committees, serving as the local committee for the area immediately surrounding the department capital, and responding to requests of the local committees in their jurisdiction.

Under the project, each RRC will also become the central depot for project equipment (see list in Annex IV, Exhibit 4.) and will be responsible for programming the use of the equipment in accordance with criteria established and requests received from the local committees. As mentioned above, the RRCs will also be responsible for reviewing subproject requests and deciding which ones will be acted upon. To develop the technical capability necessary to assume these responsibilities the RRCs will receive assistance from CV technicians.

The following table contains the organizational breakout of the RRC. Each RRC will have a staff of twenty-two, including maintenance personnel and equipment operators. In discussions with the MOPC, it was determined that the unsalaried president would probably not be necessary, given the capabilities of the proposed staff, and that presidents would be happy to be relieved of this responsibility. However, in making any changes, the director of CV will be careful to retain the support of the ex-presidents and make use of their talents. (For instance, in Coronel Oviedo the RRC president is very successful in collecting conscription taxes, his support to the project would be very useful.)

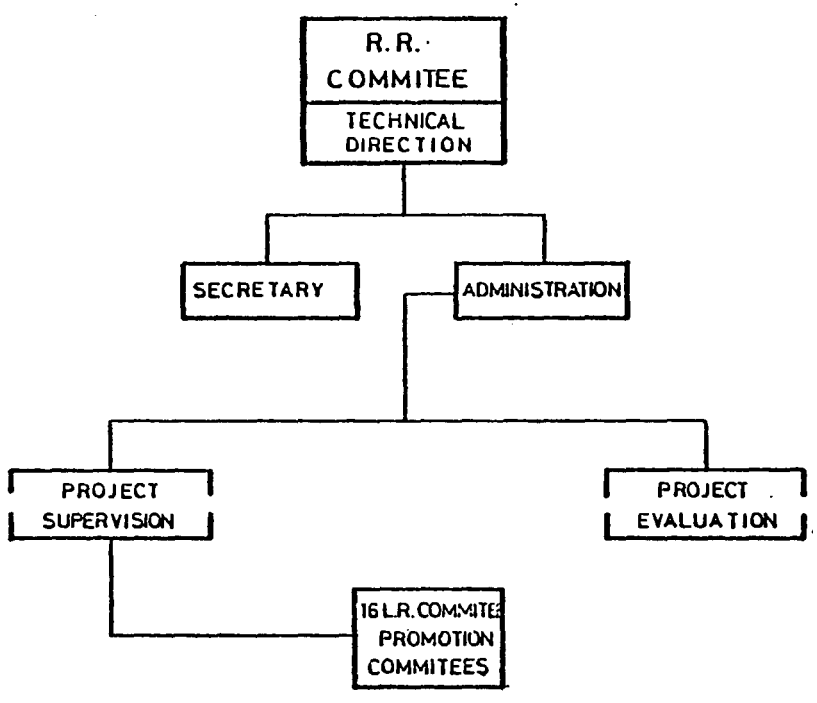
(1) Director

This individual will serve as the overall manager of the RRC and will be the technical expert. In addition to serving as manager, the duties of the director will include: reviewing subproject requests for conformance with preliminary selection criteria, conducting an economic analysis (including cost estimates) if preliminary criteria are met, final selection of subprojects; programming equipment in accordance with subprojects; and organizing seminars for local committees. The director will receive technical assistance and training from the CV. Special training will also be provided in identifying all the commercial crops grown in the project area so that the technicians sent to a proposed road site to collect cost data also will be able to estimate the number of hectares of the various crops being produced. This information will serve as baseline data for future evaluation of subproject impact.

It is expected that the director will be a surveyor who has graduated from the Instituto Geográfico Militar and has about five years of experience. The salaried secretary will remain in this office.

(2) Administrator

The administrator will have several responsibilities: collecting conscription fees from the local committees


R.R.
COMMITEE
TECHNICAL
DIRECTION
SECRETARY
ADMINISTRATION
PROJECT
SUPERVISION
PROJECT
EVALUATION
16 L.R. COMMITE
PROMOTION
COMMITEES

and establishing a sound system of accounting for them (technical assistance will help establish this system; IDM or CREDICOOP may be able to provide this assistance), performing general services functions such as ordering and receiving materials and fuels, monitoring maintenance of equipment and keeping statistics on each machine, assisting the director with planning schedules and preparing monthly reports, and supervising equipment operators and maintenance staff. This position will require a high school degree with possible knowledge of accounting. On-the-job training will be provided at the present DR facilities.

(3) Equipment Yard

Each RRC will receive a pool of equipment to undertake project activities (see Technical Analysis). An equipment yard will be established at each RRC where all machines will be based and kept over weekends when working within a reasonable distance from the yard. The mobile maintenance shop will also work out of this central yard. Routine maintenance will be performed in the yard when the equipment is not working. One individual will be responsible for guarding the yard and seeing that the equipment maintenance schedule is kept. Duties will also include meeting with operators on a weekly basis to review the operational status of the machines.

c. Local Road Committees

The Local Road Committees (LRCs) are the major link between the small communities and the rural road system. The LRCs are located in all towns of any size and have responsibility for precisely designated areas. As with the RRCs, the LRCs are served by voluntary, nonsalaried presidents (whose homes often serve as the office) and a secretary who receives a small salary. The project will not change the responsibilities of the LRCs but will seek to improve the work they currently perform.

The primary duty of the LRC is to collect the conscription fees from its area of jurisdiction. It keeps 40 percent of what is collected and passes the remainder on to the RRCs. LRCs stamp the booklets when the conscription fee (or voluntary labor) has been delivered. With funds collected from the conscription fees, the LRCs assist their local communities and Road Promotion Committees (discussed below) with projects; they also channel volunteer labor to specific projects, and coordinate the delivery of equipment available from the RRC and other sources. (In one location visited by members of the project committee, the LRC was able to rent a DR road grader for approximately 10 days per month because the DR budget permitted use of the grader for 20 days.)

At the present time, the LRCs are having difficulty collecting the conscription fee, primarily because equipment is normally not available (the GDRC has only five road graders in operation) and there is little incentive for the community members to pay the fee. With the equipment available from the project, there will be an incentive to pay the fee; in addition, technical assistance will be provided to the LRC to assist it to improve the collection and accounting of the fees. Technical assistance (possibly from IDM) will also teach the LRCs how to budget their funds to meet more efficiently their needs and those of the Road Promotion Committees.

d. Road Promotion Committees

The Road Promotion Committee (RPC) provides the basic link between the rural road system and the target rural population. Located in compañías (the smallest organized and politically recognized concentration of people in Paraguay), the RPCs are the primary impetus for work being done on rural roads.

Although usually informal groups, the RPCs are recognized by a 1954 law which authorizes them to collect funds for construction and maintenance of rural roads. In many cases, they are ad hoc groups which form to raise funds for a specific job—repair of a bridge or grading a section of a local road—and then disband upon its completion. There is, however, a broad structural spectrum which RPCs have assumed, ranging from a single individual with a specific need to a more formal community association that is permanent in nature.

Regardless of its structure, it is the RPC that mobilizes resources for work on rural roads. Requests for assistance are made to the LRC in which the RPC also indicates the amount of funds it has available to contribute to the job (normally the RPC finances materials and operating expenses of needed machinery). The contributions of the RPCs are credited to the conscription requirements of its members and their booklets are stamped by the LRC upon completion of the job.

RPCs also undertake activities without enlisting the support of LRCs and generally do so with contributions in addition to those required by the conscription system. Community activities such as dances and raffles are typical means used to raise funds. Once funds have been raised for fuel, machinery is obtained from the LRC or RRC, from the DR or army, if they have equipment in the area, or from municipalities or private sources. A considerable number of projects are undertaken in this fashion and they make a significant contribution to the overall rural road system.

While the RPCs are important elements in the rural road system they normally spring into action only when a specific road problem arises; once fixed, the problem is forgotten until it becomes a problem again. The result is a lack of routine maintenance. One function of the training specialist of Caminos Vecinales, will be to develop an awareness of the importance of preventive road maintenance. The criteria for a road being eligible for assistance under this project will include an agreement to establish a maintenance schedule and to provide, on an annual basis, the resources (funds and labor) necessary to maintain the road once it has been improved. It is expected that maintenance will cost approximately $100 per km annually.

Thus, under the project, the role of the RPC as a key component of the rural road system will remain unchanged. The only change being made is the emphasis on maintenance and the requirement that a schedule be established for maintaining roads which have been improved.

e. Technical Assistance

Technical assistance will focus on two separate areas: (1) addressing the technical needs of operating and maintaining equipment; and (2) developing and institutionalizing a technical capability at the regional level to promote, identify, analyze and select subprojects.

By establishing responsibility for the operation and maintenance of project equipment under the DR, the need for in-depth technical assistance is reduced considerably. The maintenance capability of the DR has been developed through two World Bank projects and is considered to be efrective and efficient. Under this project, therefore, technical assistance will be primarily short-term and will be used to evaluate equipment needs and to prepare IFBs, to train equipment operators (to be included as part of the equipment bidding proposals), and to assist in organizing control of spare parts for project equipment. In addition the director of CV and the regional technicians will make observation visits to rural roads projects in Bolivia, Mexico and the U.S.

The most critical technical assistance to be provided will be that given to the CV training specialist. He will be responsible for training the regional technicians in project evaluation and selection, and for holding seminars at the regional and local levels to promote the project and to sensitize the small farmer target group to the importance of road maintenance programs. A social scientist will be contracted to work directly with the training specialist for two years. The goal of this assistance will be to strengthen organizationally the regional and local road committees, to sensitize the entire rural road structure to the

transportation needs of small farmers, to sensitize farmers to the need to perform preventive maintenance, and to establish within the CV the institutional capacity to carry out these functions.

To assist the training specialist to develop the advanced consultative teaching techniques which will be required, financing for training (most likely undertaken in Puerto Rico or the U.S.) has been added. Pages 9-12 of Annex VIII contain the detailed description and cost of each technical assistance component.

f. Administrative Study

As was explained previously, the project committee (composed of USAID and MOPC personnel) concluded that a new unit was needed to administer this project. For better coordination and for obtaining economies of scale, it was also determined that the unit should be located in the DR. The project committee also concluded that an extensive administrative study should be undertaken after two years of experience in implementing the project to determine if the responsibilities of the entire secondary road maintenance system should belong in one organizational unit and, if so, where it should be positioned in the MOPC structure and what improvements should be made to the system as it has been established for this project. The MOPC stated that such a study would be most opportune at that time and requested that it be financed by the AID loan. The study will be opportune because the MOPC will complete an inventory of secondary roads by that time and the organization set up to administer the project will have a sufficient track record to permit a valid evaluation of its performance.

It is estimated that six person-months each of the following specialists will be needed to carry out the study: a transportation economist, a transportation engineer, a road equipment specialist, a road maintenance specialist, an agricultural economist with experience in rural taxation, and a systems analyst. The composition of the team will be modified as necessary and in accordance with the experience gained under the project. The team will review: (1) the inventory of secondary roads; (2) the conscription tax system; (3) the operations of the road committee system; (4) the maintenance programs for secondary roads conducted by municipalities and agribusinesses; and (5) other relevant activities. This review will be followed by a comprehensive study of the existing secondary road system and a search for ways to increase its efficiency. This will include an examination of the implementing mechanism established for this project and that of the GDRC in the remaining nine departments, and will lead to the formulation of an alternative system should it seem advisable to do so. Specific recommendations will be made for making modifications to the present system should the establishment of a new, alternative system not be necessary. The cost of the study is estimated at $200,000.

g. How the System will Function

The grass roots system of local participation in the rural road system remains the key factor in the design of this project. A condition precedent to disbursement for materials will be the development of an operations manual for Caminos Vecinales. This manual will contain a description of the responsibilities of each staff member of CV (including the staff at the regional level), a plan for promoting the project at the RRC, LRC and RPC levels (including an education campaign to teach the target group beneficiaries about the importance of a viable transportation system and the need for a maintenance program for the roads), and subproject selection criteria.

The promotion campaign will take place in the initial months of the project. Since equipment will not be available until approximately twelve months after the initial conditions precedent are met, there will be adequate time to conduct the campaign. The training specialist and director of CV, in conjunction with the social scientist, will visit communities and hold seminars about the project and the resources it will make available. The communities will be encouraged to develop proposals which will be eligible for project financing. By the time the project equipment has arrived and is in place, it is expected that a work plan for the first six months of operation (based on requests from communities) will have been worked out.

Promotion activities will be carried out over the life of the project. After the first few months, however, the following sequence of events is expected: (1) RPCs and LRCs will prepare road improvement requests which will include specific data such as a rough map of the road, the amount of resources available from the community, and the number of people served by the road; (2) LRCs will forward requests to the RRC; (3) upon receipt, the RRC technician will initiate a three-step procedure of (a) screening requests against an initial set of selection criteria, (b) conducting a detailed analysis of the economic feasibility of the proposal (see Part III. D. 5, Economic Analysis), and (c) approving subprojects and incorporating them into the work schedule.

It is expected that requests will be rejected at each of these steps. If a subproject is approved, however, an additional requirement will be to establish a maintenance schedule which the community must agree to carry out. The training specialist will be given assistance in the use of project analysis techniques and will spend a considerable amount of time traveling between the regions, working with the technicians to assure the analysis and final decision are consistent with project requirements. He and others from CV will provide technical assistance to the regional committees, and the appropriate technicians from the various elements of DR will provide technical assistance to CV as necessary.

III. PROJECT ANALYSIS

A. Technical and Engineering Analysis

1. Technology (machine/labor) Mix

a. General. Primary project benefits will derive from improving the access of small farmers to markets and social infrastructure via low-cost rural roads constructed to appropriate technological levels. Parallel with the construction of these roads will be the expansion and further development of the road committee system, in particular the Regional Road Committees--RRCs, to the point where they can continue the rural road construction and maintenance program after this project has been completed.

Priorities will be given to providing access roads to the largest numbers of farmers as quickly as practicable and utilizing an appropriate and applicable mix of machines and labor. To assure the use of appropriate technologies in constructing roads, an effort has been made to identify those construction functions better performed by machine, those better performed by labor, and those which may be performed by either. The functions better performed by machine will normally be: removing tree stumps from roadway construction areas; excavating, hauling, and compacting, i.e., earthwork; and loading, hauling, and compacting selected earthwork materials. The functions better performed by labor will normally be: clearing brush and trees from construction areas; excavating for culverts (cross drains) and their headwalls; installing culverts and headwalls; and constructing timber bridges, including most of the excavations for footings for piers and abutments. Depending upon local circumstances, certain functions may be performed better by a mix of hand work and machines or by one or the other as appropriate to site conditions. These are: excavating special side ditches (standard side ditches will normally be excavated by graders); and spreading of selected materials.

In general, the proposed technological mix will be comparable to that utilized in other LA rural access road projects making use of voluntary community labor. In comparison with the Bolivian Rural Access Roads Project I (authorized in 1976), there is a basic difference in the use of labor. In that project, 81.5% of the total labor was to be used to screen and stockpile river gravel for road surfacing. In Paraguay, no river bed gravel is available. When selected materials are required to improve the road surface (e.g., clayey material to be added to very sandy material, or gravelly material to be added to clay), these will be obtained from designated borrow sites within economic haul distances along the road being improved. These excavation and haul tasks will be performed by machines.

The machine/labor mix considered optimum, taking into account both engineering and economic variables, will be used to

construct 1/ approximately 1,400 kilometers of roads over a three-year period within program constraints of: financial cost for both AID, GOP and communities; benefitting the largest number of farmers within the shortest practicable time; effective utilization of locally available voluntary and paid labor and construction materials; and the quality, durability, and maintenance implications of the roads constructed.

The labor tasks mentioned above can be scheduled separately from the machine work of shaping and compacting given sections of each road. The MOPC is experienced with the use of the machine/labor mixes in which communities provide voluntary labor; with scheduling tasks to coincide with agricultural needs; and with meeting reasonable deadlines under these conditions. The flexibility provided by being able to schedule the labor-intensive elements of work separately from much of the machine-intensive work will make for a practical and more optimum machine/labor mix.

b. Evaluation of Alternatives. In evaluating and assessing alternative machine/labor mixes, consideration was given to labor-intensive technologies which would be most appropriate for Paraguayan conditions. The alternative mixes were evaluated by breaking down road construction into discrete tasks; comparing the cost to perform each task using different mixes; and selecting that mix for each task which has the least cost, taking into account such constraints as capabilities, quality, and scheduling. For example, referring to those functions which may be performed either by machine or by labor, the following comparisons were made for costs per kilometer.

Item	Cubic Meters	Labor Cost	Machine Cost
Special side and lateral ditches which, by nature of shape and location, will be difficult to do by machine	450	120 laborer days at $3.00 = $360	20 hours at $20 = $400
Spreading selected materials	800	120 laborer days at $3.00 = $360	16 hours at $20 = $320

2. Design Standards

Minimum design standards for these subprojects have been developed in cooperation with the GDRC and the DR. The road surface will be six meters wide at the shoulder points with normal ditches averaging 50 cm. deep below the shoulder points. Rights of way will be 20 meters wide. Horizontal and vertical alignments will follow the GDRC

1/ Construction as used herein means any and all degrees of rural road improvement, from relatively simple reshaping to the building of complete new sections of road, as may be required.

and DR accepted criteria for minimum radii of curves and maximum gradients. Bridges will be built to carry gross loads of 20 short tons (H-20) 1/ also in accord with local criteria. Annex IV, Exhibit 2, contains the details of design criteria for a typical section.

Roads will follow the natural terrain as much as practicable with cut and fill sections kept to a minimum. Drainage works contemplated will consist of standard and special road side ditches with culverts and bridges as needed. Culverts will be either locally manufactured reinforced concrete pipes or field constructed small box culverts of brick or stone masonry, and will have masonry headwalls. In certain circumstances the small box culverts may be made of readily available durable wood. Small bridges with one-lane wooden decks, where required, will be constructed as a customary community contribution. Generally the bridges will have timber abutments and pile supports, but in certain areas these may be of stone masonry.

In keeping with the present construction practices of GDRC, in the few kilometers of roads which it now maintains and reshapes with its five active motorgraders, the basic finished roadway platform for all access roads will be six meters. Also, in conformance with the present practices of the GDRC, the World Bank financed 509 PA projects, and the DR's work on rural access roads, this project will construct dirt roads with the better materials readily available. All roads will be capable of carrying the trucks which serve the subproject areas, i.e., up to 10-ton axle loads. In Paraguay, with abundant forest reserves, timber is used for bridges on farm to market roads. Standard designs are site-adapted by the DR. The participating community constructs the bridges and, where practicable, it supplies the timbers. Where appropriate and readily available, the community also supplies the stones for masonry abutments and supports.

The road committees, both RRCs and LRCs, have pointed out that road improvements must be tailored to each road or trail and be limited to those necessary to bring the road up to the standard desired by the committees and the local farmers, taking into account the support received from the community in labor or cash. In some cases, entire roads must be properly shaped from existing cart tracks and all necessary cross culverts, bridges, and other drainage facilities provided (see Annex IV, Exhibit 3, Road 1). In other situations, an existing long road in generally good condition may be virtually unusable because a

1/ A two-axle truck with 20 short tons gross load, adapted by the American Association of State Highway Officials (AASHO).

few kilometers of it become impassable for extended periods following each rain. This may result from a specific large low or swampy area or several smaller ones which require only improved drainage. The installation of culverts or raising the road level may remove such bottlenecks. In still other situations, repairing bridges and doing limited road reshaping may readily bring the road up to the standard desired by the community (see Annex IV, Exhibit 3, Road 4).

The road committees will be provided with subproject selection criteria which will permit them to assign priorities to road improvements. Since the cost of each improvement and the number of target group members benefitted are chief among the criteria, improvements benefitting the largest number of the target group per dollar expended are assured, whether full construction, minor reshaping, or elimination of a bottleneck is undertaken.

Paraguay officially closes all gravel and dirt roads in the national road system to all traffic during, and for established periods following, heavy and/or continued rains. The practice is rigidly enforced and results in intermittent road closures from 80 to 90 days per year within the area of the project. The closure is to prevent traffic damage to the road surfaces when they are soft from rains. It is expected that this practice of protecting and preserving the roads will continue and that road committees will be responsible for protecting their roads as they deem necessary. Each committee will designate, as road monitors, farmers living near the ends of each road; based on directives from the road committees, these farmers will close the roads during and after rains.

3. Engineering and Construction

All engineering and construction will be effected through a new rural roads unit designated Caminos Vecinales. This new unit will be, in practice, an integral part of the DR and will work directly with the RRCs on project implementation. At the outset Caminos Vecinales will, for lack of experience, limit itself to simple construction tasks. As experience is gained, it will expand activities to include more complicated rural road construction. In so doing, the lines of coordination within the DR will increase as Caminos Vecinales seeks advice on planning road locations and engineering assistance with the more complicated road designs; also, after the first year or two of construction, equipment in increasing numbers will be depending upon the DR shops for maintenance. (See Institutional Analysis for further discussion.)

Final selection of roads to be constructed and programming for their construction will be the function of each RRC for its area. The decision of the RRCs will be based on an analysis of all requests received from the LRCs. The DR reports that, country-wide, over 200 requests for rural access road improvements are received each year.

Of these only some 20 or 30 are acted upon in the year received. In addition the GDRC receives 30 to 40 similar requests annually. Country-wide, several hundred more are received each year by the road committees in the 171 communities where they are organized.

It is proposed to organize separate equipment groups to carry out subprojects simultaneously in the four project areas. Each group will be assigned to an RRC. The RRC director (who will also be the RRC's technical expert) will be responsible for supervising the equipment group. These directors will work under the general supervision of the director of Caminos Vecinales. (See organization chart, page 29.)

Upon receiving a request for improving rural roads from the LRCs, the RRC director will review the request, obtain data about the road site from his map system and determine whether the proposed subproject complies with the preselection criteria. If a request meets these criteria, the director will inspect the road to estimate construction requirements and costs, to conduct an analysis to determine its economic and engineering feasibility and to survey the crop mix grown in the area. Based on this analysis and knowledge of the area, the RRC will tentatively establish a priority listing of potential subprojects. For those roads fulfilling the criteria, the RRC director and the office administrator will establish a final priority of subprojects based on factors such as the location of project equipment and the factors listed in the economic analysis. Annex IV, Exhibit 2, sets out procedures for developing estimates of construction costs.

To identify the elements and magnitude of the construction and maintenance components of the program, 35 roads, tracks, trails, or sections thereof, were examined during the intensive review. Of these, 32 with a total length of 296.9 kilometers were considered to be representative of future candidate access roads. For each section of road, tabulations were made of the work required to upgrade it to the design standards contemplated. Information on the location of these road sections, the items of work, and related cost data are presented in Annex IV, Exhibit 3. They exhibit construction costs ranging from a high of $8,676/km for essentially full road building requirements to a low of $789/km for improvement of bottleneck conditions crucial to several kilometers of otherwise fairly usable roads.

The right of way for all rural access roads is a minimum of 20 meters. This is prescribed by Paraguayan law. The law also provides for exercise of the right of eminent domain when required. The GDRC reports, however, that it has never needed to exercise this prerogative because farmers have readily offered to relinquish the required right of way, at no cost, for the benefits received from the road.

a. Engineering Surveys. Almost all of the access roads to be improved will follow existing trails or unimproved roads; therefore, relatively little engineering will be necessary. Where changes in alignment could result in less expensive construction or measurably improved access, surveying will be done to realign the road and to control the new construction. In most cases, the new roadbeds will follow the profile of the land and will require no more than a few survey stakes to control uniform road width, good alignment at curves, and proper profile grade in areas of extended or substantial cut or fill construction. All culverts, special ditches or other drainage structures will be carefully controlled by surveyors as will the location and structural control of bridges. All engineering surveying will be carried out by RRC or Caminos Vecinales staff technicians.

b. Soil Studies. Where problem soils are encountered, where selected soils are needed, or where soils information is considered necessary, studies of plasticity and bearing capacity of the soils will be made. Samples obtained in the field under engineering control will be tested in the DR materials laboratory.

c. Design. Plans for each subproject will be simple. Where roadbed shaping is to be accomplished by simply using side ditch borrow material to raise the grade slightly, written plans will typically not be required. Plans will be required, however, where special construction is indicated, i.e., for curves, extended or substantial cuts or fills, unusual soil conditions, extra right of way requirements, and work related to drainage structure other than normal roadside ditches. Typical roadway sections and design details are shown in Annex IV, Exhibit 2.

d. Construction. Construction of new roads in the national system is generally performed by contract. Contractors from Brazil or Argentina have working associations with Paraguayan entities and have substantial expertise; they subcontract some culvert and bridge work to local firms. DR now does some road reconstruction in addition to road maintenance and, on an ad hoc basis, does a limited amount of new rural access road construction. The new Caminos Vecinales unit will be fully responsible for all construction under this project. All work will be done by staff payroll forces with the assistance of conscript and voluntary labor. Normal construction practices, centered around the grader as the key unit of equipment, will be followed. On an as-needed basis the graders will be supported by trucks, front end loaders, small to medium sized Caterpillar-type tractors, and ancillary equipment. The side borrow system will be used to carry out most construction work. Material from standard drainage ditches will provide the fill needed to raise the roadbed to the desired level. When additional material is required, it will be obtained by widening the ditch excavation areas adjacent to the road. Standard drainage ditches will be supplemented with special roadside ditches to assure positive drainage. Most special ditch work will be done by hand labor. Reinforced concrete pipe culverts, small masonry or wood box culverts, and small timber bridges of

one lane will provide cross drains and road crossings of the larger water flows.

Little side hill construction (heavier cuts on one side and balancing fills on the other) is contemplated. Only minor amounts of moderately rolling to sharply rolling topography will be encountered. Since this will require no long distance hauls for embankment materials, no large units of earth moving equipment are deemed necessary. For making substantial cuts or fills and also for hauling in selected materials when required to stabilize a zone of poor soils (e.g., pure sand or fat clay), either the small (3 m^3) scrapers pulled by farm tractors or dump trucks working in combination with frontend loaders will be used. A few rock outcrops of soft sandstone will be encountered. A ripper on the heavier bulldozers should be able to break up most of these rock ledges to depths required for roadside ditches. Where drilling and blasting is required, experienced users of explosives will be contracted locally.

Rains will have some bearing on the scheduling of construction, but not much. The rainier season is from October or November to March or April. Days during which no excavation work can be done are more numerous during this period but not sufficient to contemplate the need for stopping road shaping efforts for extended periods. A more important consideration will be the scheduling of work to be done by farmers and the seasonal requirements of the farms. Planting and harvest times of various crops must be a consideration in programming labor requirements for each road.

A number of the road committee presidents, both local and regional, have been contacted during the development of this project to assess their needs for additional construction equipment and operators. They believe the most useful addition is the motorgrader. Each president also expressed concern about having to plan for the efficient utilization of too much new equipment too soon. In consideration of these concerns, the procurement of equipment will be arranged in two stages. Four motorgraders (one for each department), eight earthmovers (3 m^3 pan scrapers), 10 farm tractors, eight dump trucks (5 m^3), two frontend loaders, and four bulldozers (D-6 type), together with necessary support equipment, will be in the first stage of procurement. These will be on the job in the four departments about a year before the arrival of the balance of the equipment. This will enable the CV and the RRCs to move into planning, construction, maintenance equipment, and maintenance of roads with a minimum of growing pains.

During the first construction year the roads selected for improvement will be those wherein the motorgrader, supported by local laborers and by two equipment teams, will be able to build to the specified design standards. (See Annex IV, Exhibit 3, Roads 11 and 12 are typical of those that may be improved with this minimum equipment.)

51

During the second construction year the additional equipment will arrive. Each department will then have its own construction unit of graders, small earthmovers, frontend loaders, dump trucks, bulldozers, and support equipment. The planning for efficient utilization of the full complement of equipment will be based on the year of experience with the initial equipment (added, of course, to the basic experience of the MOPC). It is not contemplated that all equipment in a department would ever be concentrated on the construction of a single road, not even one with a heavy volume of work and complex problems. The equipment and appropriate supporting manpower for the most part will be distributed to two or three roads which will be under construction simultaneously. To the extent possible these roads will be selected so that they are within reasonable proximity of each other to minimize equipment transport movement and to facilitate support and supervision. One road may be quite complex to construct (Example No. 13) while the other one or two may be much less so (Example No. 12). As work progresses, the amount of equipment and supporting labor assigned to each will be adjusted to meet the changing needs. Emphasis will be placed on full utilization of the equipment.

e. Summary Costs, Supervision, and Monitoring. Details of construction cost estimates using two methods are given in Annex IV, Exhibit 2. By the unit price per unit of work method, the estimate is $4,144/km or $5,802,000 for 1,400 km. By the cost of operations method, the estimate is $3,758/km or $5,261,000 for 1,400 km. Caminos Vecinales will supervise construction and acceptance of work completed. USAID will monitor the administration and the construction of subprojects through the office of the Regional Engineer in Asuncion. The Regional Engineer will be the AID Project Manager.

4. Equipment and Equipment Maintenance

Equipment procured for road construction under the loan will be administered and operated by employees of Caminos Vecinales. Maintenance and repair will be performed by the DR Equipment and Materials Department staff located in the district or section shop nearest to where the equipment is assigned.

The DR has five established highway districts throughout the country to support its construction and maintenance activities. Each district has headquarters and is further subdivided into sections, each with its own headquarters, as shown in Annex IV, Exhibit 1. Of the five DR districts, District One covers the area embracing all of the anticipated subprojects except for a finger of District Two which projects from the north down into Caaguazú to Coronel Oviedo, being some 25 km wide on either side of National Route 3.

The DR has a good record of equipment maintenance. Inspections of the facilities of the central workshop in San Lorenzo and of the district headquarters shop at Itaguá (District 1, Section 1) revealed that operations at both are well planned and organized. Four

years of technical assistance under World Bank financing has left DR with an effective equipment maintenance system. Most equipment (85%) is running, and minimal time is lost through breakdowns. The following tables list, by section in the project area, the equipment currently employed by the DR and the personnel assigned to service and maintain it. The equipment to be added by the project is also shown. The DR staff believes that the maintenance requirements for the new project equipment can be accommodated within the existing system since routine maintenance will be performed by mobile shops procured by the project. Also, with its own program expanding, the MOPC already has plans to increase the number of DR maintenance and repair personnel over the next three years. By 1981, the current level of 243 personnel is to increase to 332.

As noted above, routine field maintenance will be performed through the four mobile shops. Shop maintenance and minor repairs will be performed at the section shop in the area where the equipment is working. Repairs too complex for the section shops or repairs needed when the section shops are busy will be done in the district shop. Equipment requiring major overhaul will be repaired at the DR's main shop in San Lorenzo, 14 kilometers east of Asuncion. Some repair work may be done by qualified local private repair shops.

Spare parts equivalent to 20 percent of the cost of equipment will be procured with loan funds. The DR's spare parts are stored in bins and controlled by a "Kardex" inventory system. Its storage facilities have been expanded under the World Bank loans and, with the provision of some additional bin capacity, the San Lorenzo shop should have ample space to store the spare parts to be procured under the loan. Personnel at San Lorenzo have suggested establishing a separate inventory and storage system to account for these spare parts. This suggestion was accepted and the parts will be placed in separate storage bins. The DR presently has approximately 300 pieces of equipment assigned to road maintenance. To distinguish loan-financed equipment from DR equipment, it will be painted a different color. Recent loans from the World Bank have enabled DR to replace much of its older equipment as well as to improve its equipment maintenance capacity. One loan provided equipment and technical assistance for operating and administering a national road maintenance program. A second loan provided additional equipment for constructing rural roads in colonization projects. Further assistance for road maintenance is contemplated for 1977-78; this will include some $9 million of additional equipment and spare parts. World Bank loans also have financed extensive training which the DR actively supported. The training included maintenance administration, highway engineering training in Panama and in the United States, and maintenance training in Brazil. In-service training programs have been initiated using audio-visual materials and other aids. The programs have addressed various phases of road maintenance administration, operations, and preventative maintenance by equipment operators. Not all projected training objectives have been met. Therefore a

EQUIPMENT

	D.E.M.*	District 1 Sec. 1	District 1 Sec. 2	District 1 Sec. 3	Distr.2 Sec. 1	Under this Loan	Total
Motorgrader	-	8	5	6	5	6	30
Fronted loader	-	2	3	1	2	4	13
Bulldozer	-	4	2	3	2	6	17
Compactor	-	1	1	1	1	4	8
Dump truck	1	8	5	8	6	16	44
Water truck	3	1	2	1	1	2	10
Lubrication truck	-	2	1	-	1	4	8
Flatbed truck	3	1	-	-	-	5	9
Low-boy truck	3	1	1	1	1	1	8
Pick-up	7	4	2	2	2	6	21
Crane pick-up	2	-	-	-	-	1	3
Motorloader	2	-	-	-	-	-	2
Bus	1	-	-	-	-	-	1
grader	-	-	-	-	-	4	4
Pan scraper	-	-	-	-	-	8	8
Farm tractor	-	-	-	-	-	10	10
Disc, indus.type	-	-	-	-	-	4	4
Mobile shop	-	-	-	-	-	4	4
Pile driver	-	1	1	-	-	1	3

* D.E.M.: Department of Equipments and materials.

MAINTENANCE PERSONNEL

	D.E.M.*	District 1			District 2
		Sect. 1	Sect. 2	Sect. 3	Sect. 1
Chief	6	1	1	1	1
Mechanics	22	6	1	1	3
Mechanic's assistant	12	4	2	2	3
Apprentice	6	-	-	-	-
Tool keeper	2	1	✓ **	✓	1
Fitter	3	✓	✓	✓	1
Rectifier	3	✓	✓	✓	-
Electromechanical shop	34	✓	-	-	-
Transport division	6	-	-	-	-
Deposit division	9	5	✓	-	2
Turner	✓	2	-	-	1
Welder	✓	2	1	1	1
Electrician	✓	3	-	-	1
Lubricator	✓	✓	✓	✓	1
Lubrication helper	✓	✓	✓	✓	1
Blacksmith	✓	1	✓	✓	1
Vulcanization	✓	1	✓	✓	1
Auto body fitter	✓	1	-	-	1

*D.E.M. - Department of Equipment and Materials

**These services are rendered even without specific personnel assigned for these jobs.

training component is expected to be included in the upcoming World Bank loan.

5. Road Maintenance

The new Caminos Vecinales (CV) unit (through the system of RRCs and LRCs) will be responsible for the maintenance of the roads constructed, reconstructed, or upgraded under this loan. Road maintenance will be divided into minor and major categories. Minor maintenance will be performed by the benefitted communities using voluntary and conscripted labor to do tasks that can be accomplished by labor plus a farm tractor such as pulling a road grader over the road periodically to maintain its shape, to improve drainage, and to eliminate "washboards". Labor tasks will also include correcting minor erosion before it becomes a problem, filling potholes, draining small wet areas, and cleaning ditches and culverts. Minor maintenance will be directed by Caminos Vecinales through a local monitor who will have the technical knowledge to see that the work is being done correctly. The monitor will be selected by the LRC, which will also organize the labor needed to support the work. After completing each improvement the LRC will monitor the road to ensure adequate maintenance.

Major maintenance such as correcting localized washouts, reconstructing a section of badly washed road, and the periodic passing of a grader to reshape and to smooth the road will be the responsibility of Caminos Vecinales. Caminos Vecinales will program a minimum of two passes of a grader over each road per year. For emergency repairs, the LRC will channel requests for assistance through its RRC to Caminos Vecinales. Replacement of material eroded by traffic and rain may be required. However, this is expected to be minimal since the roads will be lightly traveled. In many cases the motorgraders will be able to widen the standard ditches to obtain these materials. A preliminary projection of estimated maintenance needs for rural access roads based on DR data shows an annual cost of $200 per km. 1/

6. Equipment Procurement

A proposed equipment list developed with the GDRC and the DR is given in Annex IV, Exhibit 4. It is divided into initial and final procurements. The first procurement will meet the needs of construction crews working simultaneously in each of the four departments and doing only that road construction which can be accomplished with the motorgrader as a key unit of equipment. At the outset the construction unit in each department will be constructing a minimum of three km of roads per month. By the beginning of the second construction year this minimum rate will have increased to seven km per month per unit. The

1/ Ray Jorgensen Associates, consultants of MOPC, in their Informe Técnico-Economico Final, Programa de Mantenimiento de Rutas y Estudio de sus Necesidades Futuras, 1977-1982, discuss maintenance of similar roads using figures for the years 1978 to 1982 which vary from $186 to $196/km for normal years and up to $218/km for an exceptional year.

analysis of construction accomplishment in Annex IV calculates that some 216 km of the less difficult roads will be constructed during the initial year. With experience gained and more equipment, this will increase to about 552 kilometers of all types of construction for the second year and to some 632 kilometers the third year for a total of about 1,400 kilometers, plus maintenance of all roads previously constructed. Project cost analyses are based upon a total of 1,400 kilometers of roads.

The DR's experience on the World Bank/IDA financed 509 PA colonization project near Caaguazú shows that a motorgrader unit with ancillary equipment can complete an average of 14 kilometers of new road per month along with making maintenance passes over some 70 kilometers per month. The project has a minimum construction rate of 10 kilometers of new road per month per motorgrader construction unit. This construction is under relatively simple terrain conditions.

The scheduling of equipment presumes a procurement lead time of one year following the meeting of the initial conditions precedent. The estimated cost of the total procurement is $3,934,000. During this first year, organization of Caminos Vecinales, studies, training of road committees, reviews, establishment of priorities, and general programming will be accomplished.

7. Potential for Continuation of Rural Road Construction

The project will improve about 23 percent of Paraguay's 6,000 kilometers of rural road and cart track network. It will also provide impetus to a nationwide program of providing the many small farmers with adequate access to markets, schools, health facilities, and other local infrastructure.

The program can be expected to continue and expand because: (a) the road committees responsible for rural road improvement will be strengthened; (b) small farmers not receiving assistance under this project will demand assistance to improve their roads; (c) the demonstrated economic return from rural road improvement should be attractive to GOP planners; and (d) an organization capable of administering effectively the rural roads system, Caminos Vecinales, should be established, have a proven record and give the MOPC the confidence needed to apply for additional international loans to finance the equipment needed for Caminos Vecinales to expand its operations. In summary, the institutional bases for a continuing program of rural road construction, with requests for the improvements generated by the farmers themselves, will be well established.

B. Social Analysis

1. Sociocultural Feasibility

a. Socioeconomic characteristics of the target population and region

Rural target group identification in Paraguay's central zone, including the Departments of Cordillera, Guairá, Caaguazú and Paraguarí, must be made within the whole unique agroeconomic context of the country. Paraguayan agriculture is distinctive and atypical of agriculture as practiced elsewhere in Latin America. It is distinctive in that about 87 percent of Paraguay's farming population has small holdings (under twenty hectares) upon which as many as fifty different crops are cultivated in an intensive manner, i.e., with large inputs of human and animal energy. Most smallholding farmers of Paraguay practice diversified rather than specialized agriculture, even when growing cash crops such as cotton or tobacco, which are their principal crops for the world market. Farmers thus persist in using labor intensive techniques to wrest a living from the soil, even though such techniques are inefficient and prohibit them from accumulating surplus labor, capital or land.

In the central zone departments, where minifundia agriculture predominates, one finds an especially high proportion of smallholders and poor farmers. Eighty-four percent of the farmers in the target area have less than 10 hectares owned, rented or usurped, whereas in the nation as a whole only 58 percent have less than 10 hectares at their disposal. Because of this heavy concentration of smallholders in the zone, subsistence agriculture is more predominant than elsewhere in Paraguay.

The approximately 57,000 small scale farm families who inhabit the target region are caught in a vicious circle of economic marginality. Because so much human energy is required to maintain the delicate agricultural system of the zone, farmers have little time or energy to improve their condition, either economically or socially. The continuing depletion of soil fertility in the zone, now farmed for about 400 years, makes it ever more difficult for smallholders to subsist. In fact, the podolic, red-yellow sandy soils that cover most of the region were never suited for much more than subsistence agriculture.

Farmers in the central zone remain locked in the past, unable to accumulate any of the surpluses necessary for improving their life styles. The farmer's calendar of activities, included as Annex X, demonstrates that farmers are employed most of the time harvesting or planting about five different crops every month of the year. Although corn, mandioca, sugar cane and animal husbandry comprise the heart of their subsistence activities, smallholders grow most of the 47 different

crops listed in the calendar. While this diversification protects smallholders from the risk and uncertainty of monocultural production, it is disadvantageous in that it retards development of economies of scale and it absorbs most of the family's labor, making it difficult for farmers to escape the subsistence economy associated with the labor intensive, animate energy system.

Illustrations I through V demonstrate rather precise where the smallholders live in the target region. These illustrations are a synthesis of many sources, including the USAID cadastral maps, the 1969 agricultural census and the Small Farmer Survey. Although the are not infallible these illustrations contain excellent data on where the target group lives within the target region. Illustration I, below shows Paraguay's overall population density in relation to population density in the four target departments. Illustrations II through V show the concentration of smallholders on a department by department basis. Districts containing the largest number of smallholders are listed separately below each map.

ILLUSTRATION I

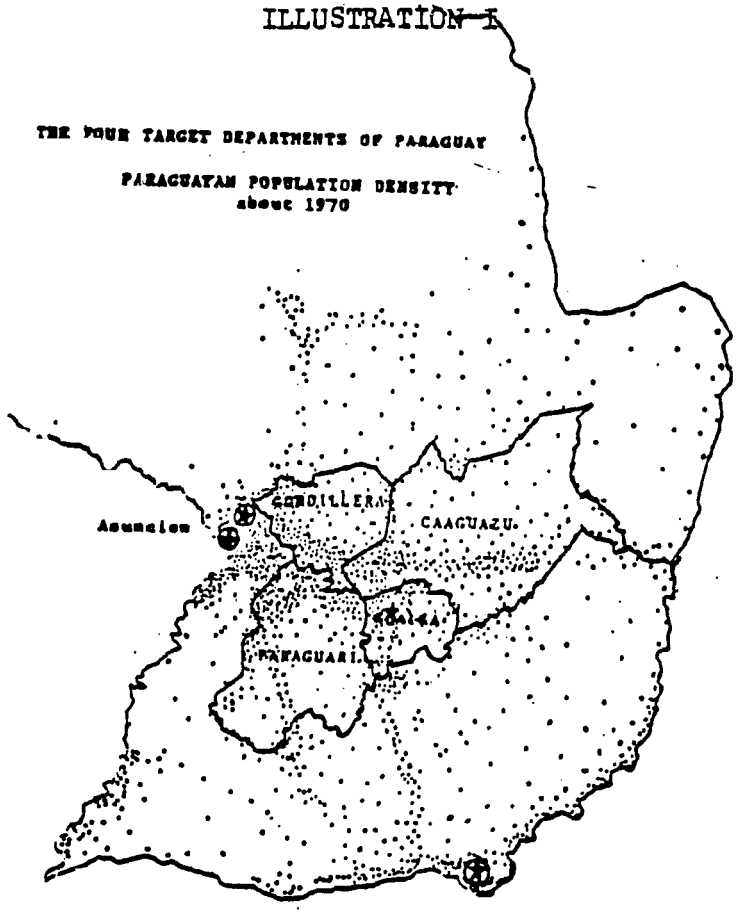
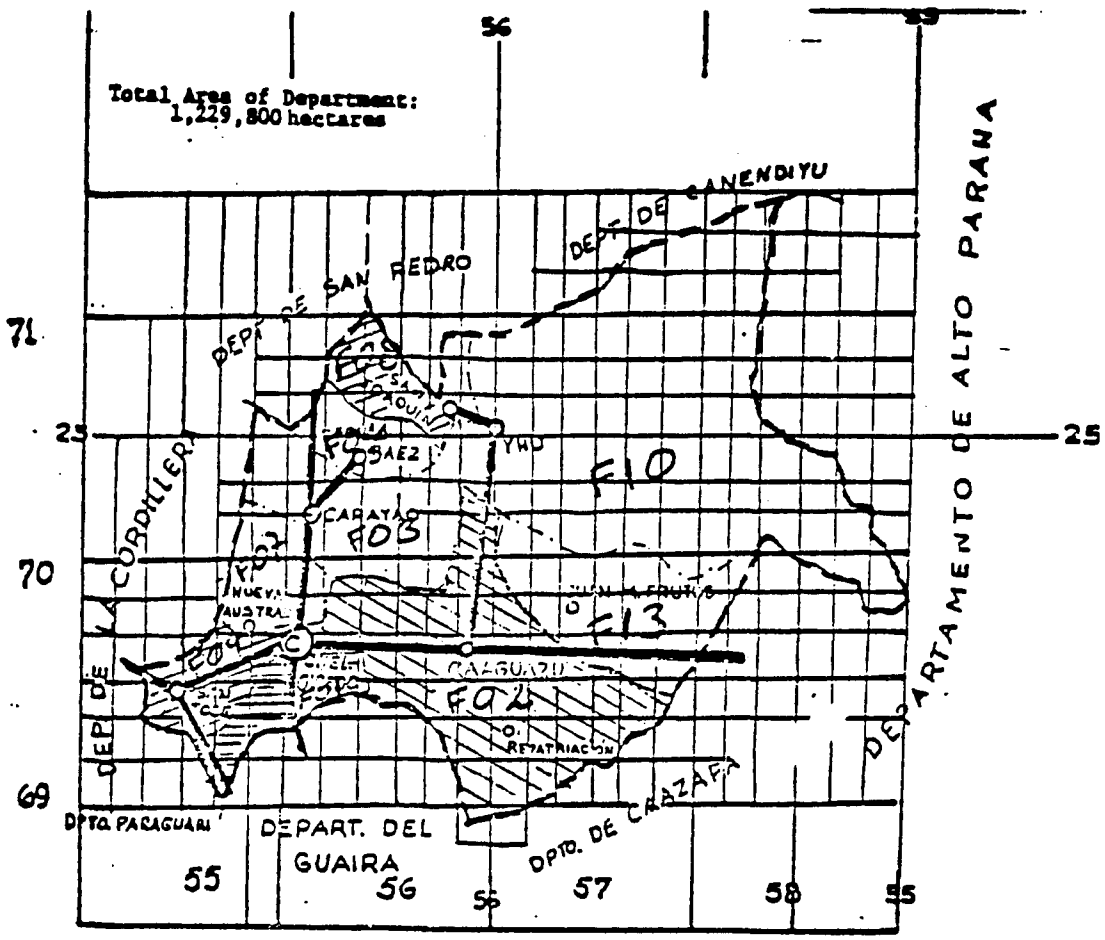


ILLUSTRATION II

AREAS OF SMALL FARM CONCENTRATION

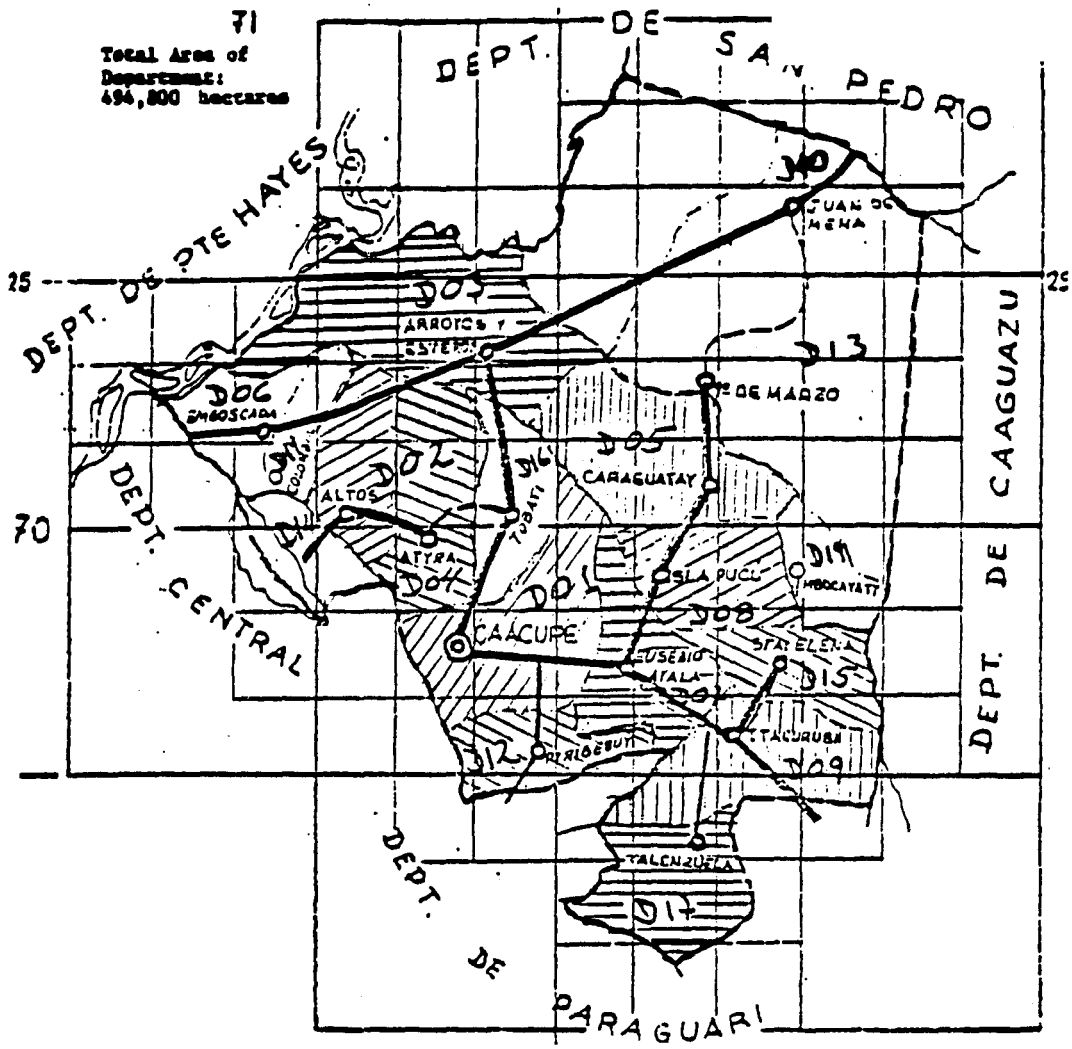
Caaguazú Department



Location	Place	Number of Farms under 10 ha.
F01	Cnel. Oviedo	3,041
F02	Caaguazú	1,249
F03	Carayaó	162
F04	Cecilio Báez	23
F07	Hugo Stroessner	108
F08	San Joaquín	202
F09	San José	1,240
F10	Yhú	78
F13	Juan Manuel Frutos	70
F14	Repatriación	7
	Total	6,180

Source: Small Farmer Survey and Cadaster Project data calculated by the Dirección de Impuesto Inmobiliario.

ILLUSTRATION III
AREAS OF SMALL FARM CONCENTRATION
Cordillera Department



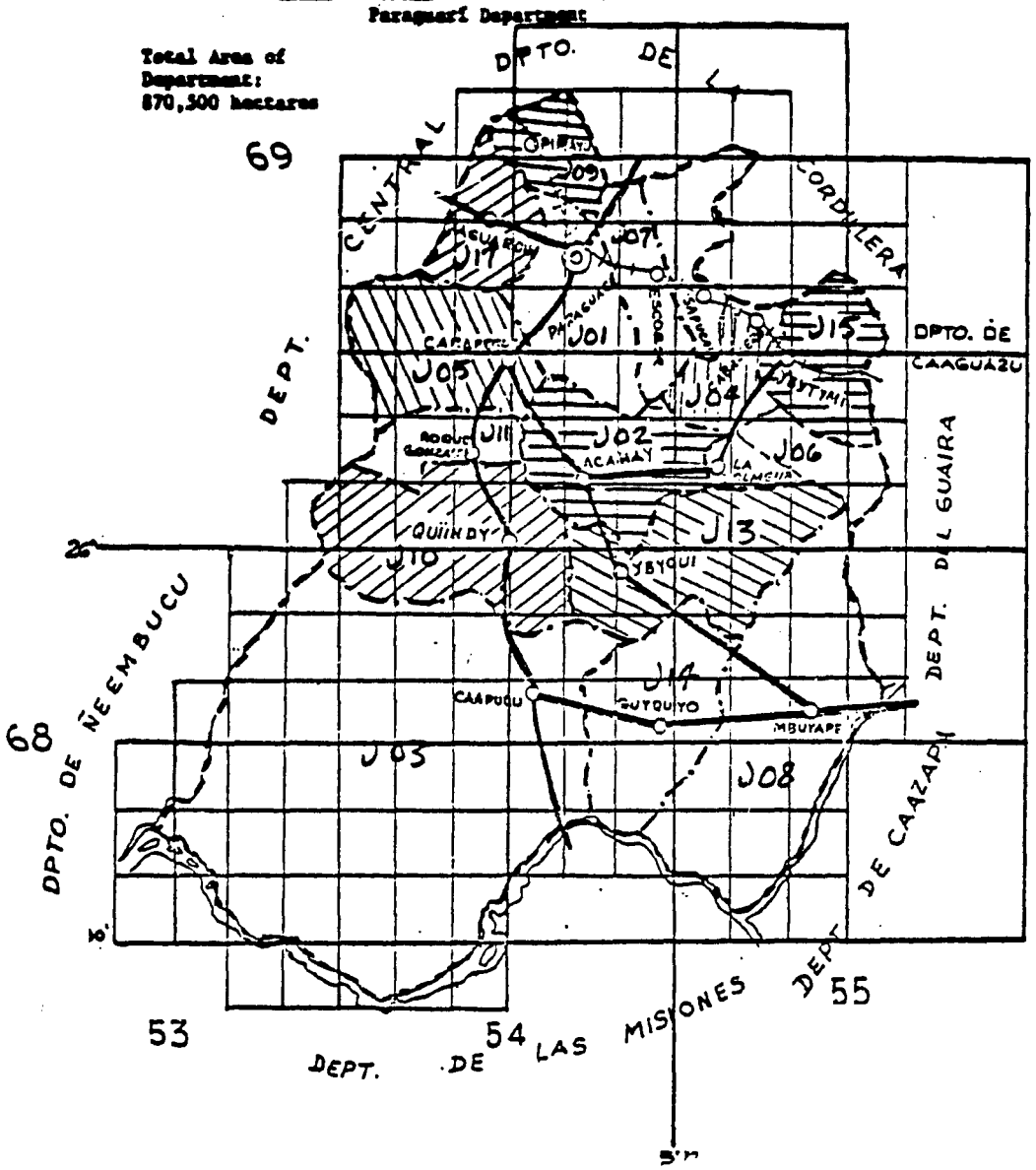
Location	Place	Number of Farms under 10 ha.
D01	Caacupe	4,556
D02	Altos	978
D03	Arroyos y Esteros	3,200
D04	Atyrá	1,003
D05	Caraguatay	3,239
D06	Emboscada	672
D07	Eusebio Ayala	1,252
D08	Isla Pucú	1,018
D09	Itacurubí de la Cordillera	820
D10	Juan de Mena	401
D11	Nueva Colombia	169
D12	Piribebuy	,189
D13	1º de Marzo	489
D14	San Bernardino	1,913
D15	Santa Elena	1,784
D16	Tobatí	736
D17	Valenzuela	950
	Total	24,369

Source: Small Farmer Survey and Cadaster Project data calculated by the Dirección de Impuesto Inmobiliario.

61

ILLUSTRATION IV
AREAS OF SMALL FARM CONCENTRATION
Paraguarí Department

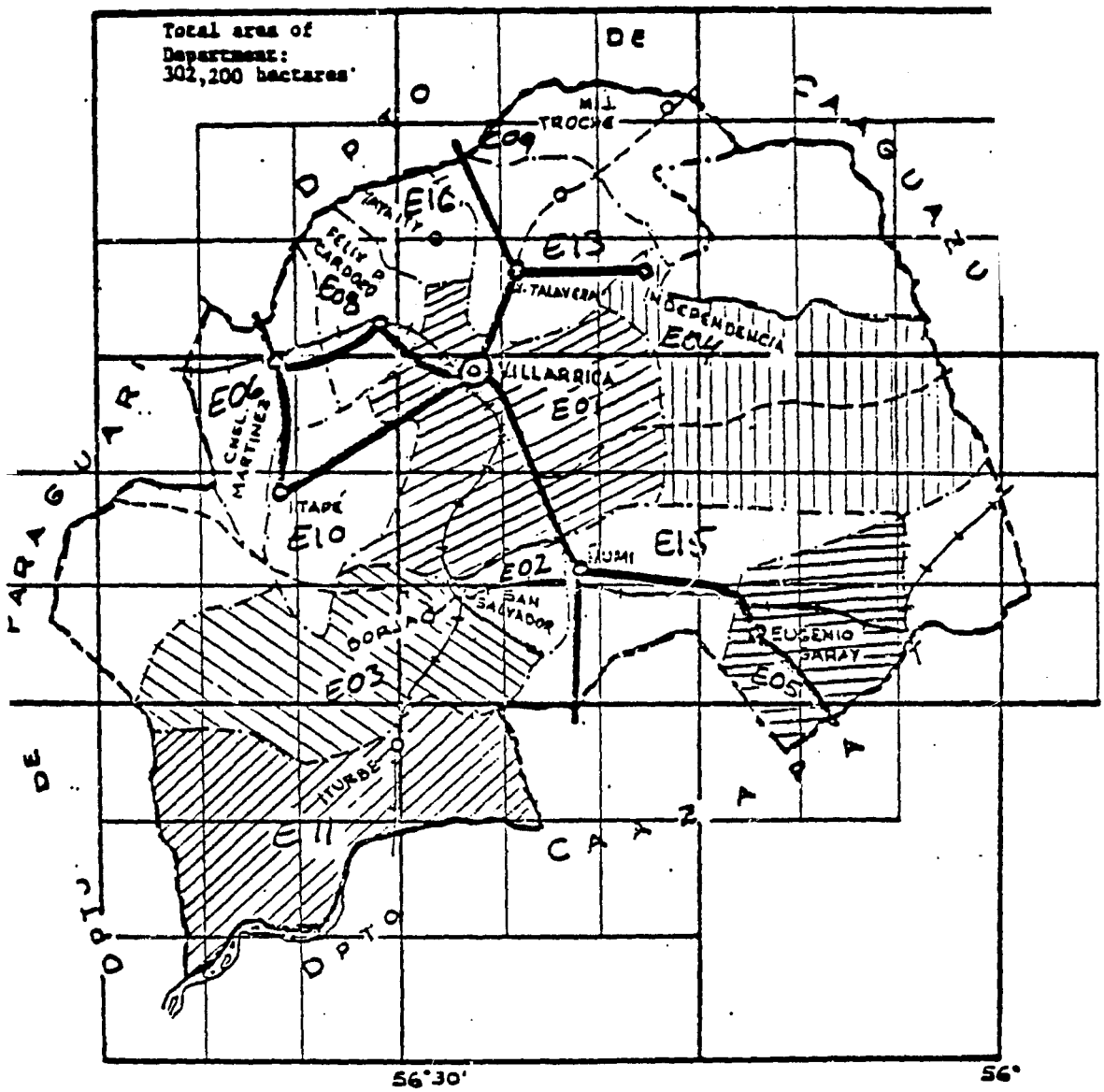
Total Area of Department: 870,300 hectares



Location	Place	Number of Farms under 10 ha.
J01	Paraguarí	1,916
J02	Acahay	548
J03	Caapucú	373
J04	Caballero	446
J05	Carapeguá	3,244
J06	La Colmena	529
J07	Escobar	382
J08	Mbuyapey	201
J09	Pirayú	1,141
J10	Quiindy	1,492
J11	Roque González	1,080
J12	Sapucai	586
J13	Ybycuí	1,757
J14	Quyquyhó	805
J15	Ybytymí	322
J16	Tebicuary-mí	25
J17	Yaguarón	118
	Total	14,965

Source: Small Farmer Survey and Cadaster Project data calculated by the Dirección de Impuesto Inmobiliario.

ILLUSTRATION V
Areas of Small Farm Concentration
Guairá Department



Location	Place	Number of Farms under 10 ha.
E01	Villarrica	3,058
E02	San Salvador	18
E03	Borja	729
E04	Independencia	132
E05	Gral. Eugenio A. Garay	54
E06	Cnel. Martínez	53
E07	Jose Fassardi	—
E08	Félix Pérez Cardozo	307
E09	Mauricio José Troche	17
E10	Itapé	762
E11	Iturbe	631
E12	Mbocayaty	559
E13	Natalicio Talavera	154
E15	Ñumi	48
E16	Yataity	23
	Total	6,545

Source: Small Farmer Survey and Cadaster Project data calculat[illegible] the Dirección de Impuesto Inmobiliario.

63.

The economic welfare of the smallholders identified in illustrations II through V is extremely precarious. On the average these minifundistas earn considerably less than the $296[1] per capita income specified by A.I.D. to distinguish the poor from the nonpoor. Illustration VI provides a detailed summary of the rural target group's economic characteristics. The average smallholder in the target region who has access to less than 10 hectares of land earns a per capita income of $154. This is even $5 less per annum than similar small farmers located in the remainder of eastern Paraguay. By all measures the beneficiaries under the proposed project are among Paraguay's poorest of the poor.

In fact, the per capita income data generated by USAID's detailed Small Farmer Survey seem to indicate that virtually all farmers in the target region have annual incomes of less than $296 (as confirmed by Illustration VI). Nevertheless, USAID/Paraguay believes that the per capita income measure is inadequate and somewhat misleading because it does not consider other economic factors, such as farm capitalization. Smallholders in the survey who have between 10 and 50.9 hectares are considerably better capitalized (gross investment in land, machinery and buildings) than is the group of farmers having less than 10 hectares, even though both groups fit within the A.I.D. per capita measure. Even though all farmers in the region appear to fit within the income criteria, USAID/Paraguay has chosen to direct this project toward the poorest of the poor, farmers holding less than 10 hectares. Once the project is underway, it would be relatively easy to expand, or replicate, so as to include farmers in the 10-50.9 hectare range.

In addition to low family income (less than $1,992 pa), USAID/Paraguay includes the following criteria to distinguish poor from nonpoor farm families in the target region: the poor experience low access to potable water, electricity, and other services, high infant mortality (84.2 deaths under one year per 1000 births for all of Paraguay, and estimated to be well over 100 for the rural target group), high birth rate (over 40 per 1000), and limited access to transportation. There are about 57,000 families in the target region who meet most, if not all, of the aforementioned criteria. This means that the actual number of potential direct beneficiaries in the zone is about 350,000 persons.

This target group is particularly distinct and identifiable. Because of the extensive research carried out under USAID/Paraguay's cadastral mapping and the Small Farmer Survey, it is possible to identify project recipients on an individual basis. Below, for example, is a cadaster map of a typical smallholder area in the target region. Following such maps for the target region, it is possible

1/ $150 in 1969 terms.

ILLUSTRATION VI

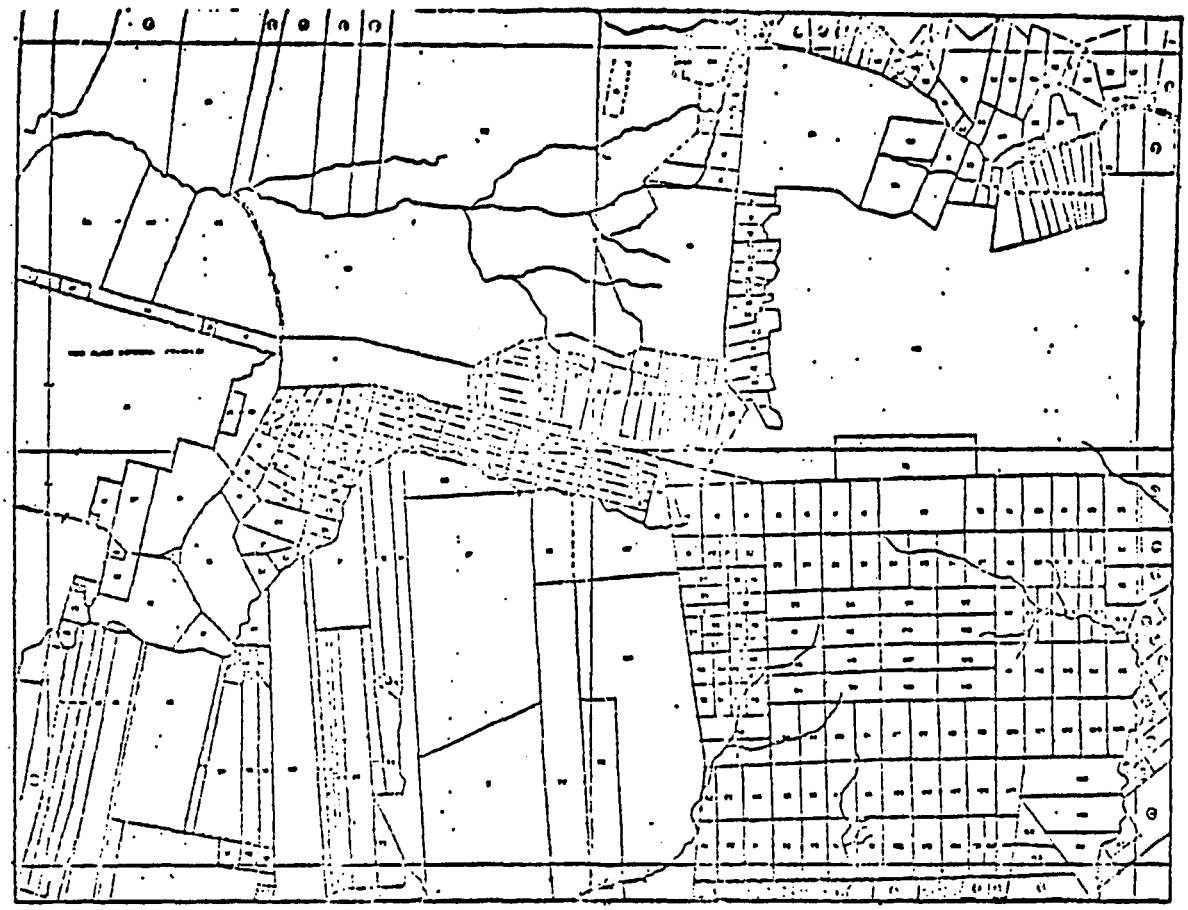
CRITICAL ECONOMIC CHARACTERISTICS OF RURAL TARGET GROUP POPULATION, BY SIZE
In all of Eastern Paraguay and in the target region--1976.*

	0-4.9 ha.	5-9.9 ha.	10-20.9 ha.	21-50.9 ha.
AVERAGE PER CAPITA INCOME OF FARMERS IN ALL OF EASTERN PARAGUAY	$150.	$181.	$194.	$277.
	$159.	10 ha.	$208.	> 10 ha.
AVERAGE PER CAPITA INCOME OF FARMERS IN 4 DEPTS. TARGET REGION	$141.	$195.	$228	$215.**
	$154.	< 10 ha.	$226.	> 10 ha.
NUMBER OF FARMS IN EASTERN PARAGUAY (%)	82,714 (40.4)	35,042 (12.12)	71,997 (35.17)	14,987 (7.32)
NUMBER OF FARMS IN TARGET REGION (%)	43,695 (64)	13,408 (20)	9,892 (14.5)	1,313 (1.9)
	57,103		11,205	
AREA CULTIVATED IN TARGET REGION (has.)	93,944	93,722	129,091	45,666
NUMBER POTENTIAL BENEFICIARIES IN TARGET GROUP	255,616	95,063	66,672	8,666
AVERAGE FARM SIZE IN TARGET REGION (has.)	2.15	6.99	13.05	34.78
AVERAGE AREA ANNUAL CROPS GROWN IN TARGET REGION (has.)	1.4	3.1	3.78	4.20

* Net per capita income derived from household income, including off-farm earnings and on-farm consumption. No imputed costs for family labor included. Calculated on basis of data gathered under 1976 SMALL FARMER SURVEY.
Official exchange rate ₲126 = US$1.

** Estimate made because of small sample.

to identify with great precision where small farmers live and what their access is to the road system. Data from such maps will be obtained for each road site to be improved during the project to insure that the target group is receiving maximum benefits. It would be premature to carry out such an analysis before the implementation phase of the loan.



In summary, the available evidence for the target region tends to support the assumption that the distribution of wealth is considerably more unequal than the mere distribution of income and land, and that fixed and operating income other than land is predominantly in the hands of larger farmers. It is significant that after years--or generations--of work, smallholders of less than 10 hectares have few material possessions.

b. The target group and the transportation system

Roads are the predominant form of transportation in the target region and their presence or absence is the greatest single factor influencing the settlement patterns of the target population. Population density in the region is greatest along the two paved roads, Routes 1 and 2, and around four small urban centers: Villarrica, Paraguarí, Coronel Oviedo and Caacupé. In preparing this analysis, population distribution was correlated with soil type, quantity of arable land and the transportation network. The latter, the road system, emerged as the most important single factor in determining the settlement patterns of Paraguay's rural population. Soil type and water resources exercised little, if any, influence on settlement patterns.

A good all weather road system contributes significantly to healthy agriculture development. The lack of a good system is a serious constraint to all agriculture marketing activities in Paraguay. In 1976, the Planning Office of the Ministry of Agriculture held a special workshop on small farmer development strategies and concluded that the lack of all weather roads is the most serious constraint to agricultural development in the country. A recent survey of needs in 68 municipalities of Paraguay revealed that about 50 percent of them believed improvement of rural roads should be a priority item.

A simple calculation demonstrates that only a very small percentage of all farms are located on paved roads. That is, there are only two major paved roads in Paraguay--the road from Asunción to Encarnación, a distance of 370 kilometers, and the road from Asunción to Puerto Presidente Stroessner, a distance of 327 kilometers. There are approximately 200 kilometers of additional paved roads (a total of 900 kilometers of pavement). If we assume a conservative average of 100 meters of road frontage per farm, there could be no more than 18,000 farms (10 percent of total farms) on the entire paved road system on both sides of the road. This calculation is clearly an exaggeration of the number of farms located on pavement. There are many virgin tracts of forest land on the Stroessner road, while both major roads have innumerable small towns and large land parcels along the road. The results of a survey of 100 farmers infer that no more than five percent of farms are located on pavement.

ILLUSTRATION VII

Approximate Number and Percentage of Farms Located on Paved Road, Dirt Road Passable by Vehicle, or Foot Path

Transportation Type	Paved road	Dirt road	Oxcart road or foot path
Percent of Farms having access to	4.0	36.0	60.0

The above illustration points out that 60 percent of all farms are located on a road best described as suitable for oxcarts or foot traffic. Thirty-six percent of the farms are located on a dirt road passable by vehicles. The road system has been improved somewhat in recent years. However, the road system is still rudimentary and inadequate and is one of the greatest obstructions to efficient assembly, distribution and marketing of agricultural products.

The lack of adequate roads is a serious constraint to smallholders because that group depends upon the road system for marketing their meager production and for delivering the inputs needed for their farms. The Small Farmer Survey confirms that the basic means of transportation for smallholders is by foot and by oxcart. Approximately 50 percent of the farms smaller than 10 hectares own an oxcart. Each oxcart, with oxen, costs between $800 - $1000. Considerable costs are involved in maintaining the wagon, including new wheel hubs every season, body repairs and forage for the oxen. Not having cash to provide these inputs, smallholders are forced to invest considerable labor in providing animal feed and repair parts.

Small farmers cannot afford to invest either time or labor in securing transportation for themselves or their family's produce. Unlike many developing countries Paraguay does not suffer from substantial unemployment in the agricultural sector, especially in the minifundia region. Some tend to conceptualize the problem of unemployment and underemployment in the campo as one of hundreds of people wandering around on the brink of disaster, willing to accept any kind of work, and physically able to do hard labor, actively seeking work in a large radius around their homes. In Paraguay the facts do not fit this concept. Smallholders with a need for extra hands during the critical land preparation and harvest seasons, find most of their

neighbors busy on their own plots, while the landless laborers are fully employed on the larger farms, at service jobs, or even in nearby countries at salaries which small farmers cannot afford to pay. When surplus agricultural labor is available, smallholders barely have enough work to keep themselves and their families busy. Surplus labor is rarely available in Paraguay, given the rigorous crop diversification outlined in Annex X. Finally, hard physical labor with hand tools is not highly productive, does not command a living wage, is not actively sought, and in fact is sometimes rejected by the unemployed.

Thus, providing small farmers with better roads should help to ease the labor shortage, which has been increasing in recent years. Opening roads to buses and regular truck service will allow farmers and their products to flow with greater ease to local, regional and national markets. At the same time, providing smallholders with better roads should not reduce employment opportunities significantly in the target region. If anything, more jobs will be created to expand bus lines, maintain roads and to deliver more inputs directly to small farms.

This is not to say that animal powered transportation does not have some advantages. Oxen, mules and horses can be produced in rural areas, fueled by rural products and can be used where vehicles cannot go. Rural societies reach a point, however, where the disadvantages of animal power finally outweigh the advantages. When farmers attempt to increase their production without access to truckable roads, demand for traction animals increases. Because it takes many years to produce a trained ox or horse for field work, demand for such animals tends to outstrip supply, especially in the near term. This shortage forces animal prices up and causes hardships for small farmers who cannot afford to pay for any other kind of transportation. At the same time land must be set aside to grow forage to feed traction animals, especially during the dry winter season. Two oxen can easily require three hectares of forage area, preventing use of the land for higher value production. Much labor is also required to gather and carry forage to the livestock, presenting another demand on the farmer's time. By all indicators Paraguay has reached the point where a transition to fossil fueled vehicles is appropriate despite the high cost of fuel. Recent statistics confirm that the annual switch from animal to vehicle transportation varies between 8-19 percent, a high rate of change.

Increased efficiency in the road system is essential if smallholders are to keep pace with increased production and living costs. Roads in the target region are closed about 80 days a year or about 25 percent of the time. These closings are spread evenly through each of the twelve months and are unpredictable enough to cause farmers to lose money on unmarketed crops. A 1976 marketing study by Kansas State University suggests that improving roads in highly populated regions such as the target area is economically sound and should be beneficial to farmers.

In conclusion it is reasonable to assert that (1) the intended beneficiaries of the project are clearly identifiable, (2) that the target group meets basic A.I.D. criteria distinguishing them as poor, and (3) that the sociocultural situation is one in which smallholders must become more efficient to survive increasing economic pressures. Evidence seems to indicate that the beneficiaries desire improvement of their rural roads and will support the proposed project. There are no apparent values, beliefs, social structures or organizations in opposition to the project and there should be no major obstacles to implementing it.

2. Spread Effects of the Proposed Project

As clearly pointed out in the Interim Report (pp. 4-5, 15), local road committees play an important role in decision making vis-a-vis rural roads. This highly participatory decision making system, in effect since 1951, should continue to be effective in seeing that the proposed project is successfully implemented. These local road committees, discussed in great detail in Part II.B.6 of this PP, will likely guarantee the effective diffusion of knowledge about the proposed project. Their very presence and reputation will give form and direction to local demands for road improvements. The higher visibility the road committees will likely achieve once the proposed project is implemented will increase public awareness of the committees' work. In turn this will help to strengthen the committees and contribute to the institutional building goals of the project.

At the grass roots level there are several potential obstacles to effective replication of the proposed project. At this time these obstacles are much more potential than real and it is believed they do not seriously endanger the proposed project. However, these potential obstacles are included to give a fair and complete picture of what the future might hold for the region and the beneficiaries.

Historically, outmigration was one of the most important socioeconomic characteristics of the target group. Inhabitants of the zone, especially young people, frequently migrated to Asunción or to Argentina in search of better opportunities. This further exacerbated the overall shortage of day laborers and those who performed menial service jobs in the agricultural sector. The problem was not the lack of employment opportunities but the lack of the right kinds of jobs for rural young people with rising expectations.

In the last two years this outmigration has slowed considerably because wages in rural Paraguay have improved considerably and because Argentina offers far fewer attractive employment opportunities for Paraguayans. Even a common laborer can earn as much as $10 per day during the harvest seasons. The tendency of the young to outmigrate has also been curtailed by a demographic reality, which is that the rural

population is growing older and passing the child bearing age. Therefore, outmigration has apparently peaked and it will not likely have adverse effects on the project.

A second potential obstacle to the success of the proposed project is that, at present, the system of building and maintaining rural roads is sometimes subject to political pressure. Resource allocation is made according to party affiliation, friendships or interventions by wealthy locals, such as the middlemen who are local moneylenders. There can be little doubt that when the project provides more resources at the local level there will be greater political pressures exerted by the aforementioned groups. Nevertheless, the project includes numerous safeguards designed specifically to counteract such political pressures. By restricting project activities to roads of limited size and in specified areas where small farmers predominate, political pressures can be eliminated The project design incorporates a simple system for the selection of roads which will be improved. The President of the Regional Road Committee usually makes such decisions unilaterally. albeit anyone who receives services of road graders must pay the operating costs. The new procedure will include a technical assistance component whereby objective verifiable indicators will be used to guarantee that roads are improved in the areas where they will have greatest impact on the poor majority. These indicators include house counts, areas farmed, and agro-topographic features. In summary, as long as most of these indicators are applied during the implementation phase of the project, there is little likelihood of undue political pressure being used to improve inappropriate roads--those which do not benefit the smallholders in the region.

3. Social Consequences and Benefit Incidence

The proposed project, if implemented according to the selection criteria, will bring a number of direct benefits to the target group:

(a) Considerable time will be saved by target group families because they will find it easier to transport goods and themselves, either by oxcart or by motor vehicle.

(b) Time saved will, in effect, save labor in a labor-short target group.

(c) Time and labor savings will allow the target group to make fundamental changes in their cultivation and animal husbandry practices, making it possible for them to increase their total farm production.

11

(d) Efficiency in farming operations will increase because there will be less likelihood of crop spoilage between harvest and marketing, more time/labor will be available for cultivation of larger areas, and there will be a gradual decrease in the amount of land needed to provide forage crops for oxen. This will free more land for potential cultivation and should lead to increased production of cash crops.

It is possible to predict benefit incidence only in general terms because little research has been done in Paraguay to identify the precise relationship between various social changes and the relative availability of roads. This lack of hard data limits what can be predicted about future rates of change in the target region. Social change takes place when the total force exerted by a series of pressures for change becomes stronger than the sum of the forces resisting change. Roads are critical in this play of forces and are basic for successful rural development.

In general terms most inhabitants of the target region will receive some basic benefits. In the minifundia area poverty levels are masked by a high population concentration, highly visible accumulated services, such as schools and health posts, and other indications of a more prosperous past. Mission research has identified this area as the most needy in Paraguay. Some of the factors indicating that there will be basic benefits to the entire region are:

SITUATION	POTENTIAL BENEFIT
1) High population density	- more people will be served by each kilometer of improved roads;
	- more volunteer labor is available;
	- machinery can be used more efficiently;
2) The closeness of the project area to Asuncion	- more likelihood of other necessary infrastructures of a full use of the improved roads;
	- simpler administration and control of the project;

3)	The experimental nature of the project and possible replication	- Higher visibility will increase public awareness and the likelihood of extending the project; - More fully developed rural roads committee structure allows more efficient concentration on the institution building aspects of the project;
4)	The needs of the population of the minifundia area are increasing	- The minifundia area is receiving less assistance than the colonization area; - Outmigration has drained off the younger, more change-prone population.

Specifically, two groups will likely receive high benefits from the proposed project: rural women and the rural road committees. Women play an especially important role in rural Paraguayan society. In fact, 30 percent of the smallholdings under five hectares are managed completely by women. In contrast only seven percent of the larger farms (21-50.9 hectares) are managed completely by women. At the same time female producers in the under five hectare category tend to be considerably older, average age 50 years, than men, average age 43 years, in the same farm size category. Older women heads-of-households who are minifundistas should receive a significant share of the benefits of the project. Even on small farms where women are not heads of households, informal inquiry and observation suggest that much of the cash income comes from a variety of minor enterprises carried on by women, such as small animal production and home industries. The farm wife is usually responsible for schooling arrangements and all education related expenses. Health service, religious activities and the frequent purchases of smaller farm supplies and home needs are usually the responsibility of women. All of these activities require frequent trips to nearby communities. Improved roads will benefit women by reducing the travel time needed to carry out their responsibilities and also by removing some of the hazards of travel on poor roads.

Secondly, there will be a series of social benefits as a result of the strengthening of the road committee system. As described in Parts II.B.6 and III.C.3 the system is currently very inefficient. Nevertheless, it does have the characteristics necessary to be the vehicle to stimulate and coordinate local participation in rural road improvement: it is legally established, has acceptance by the government and the rural population, and is committed to rural road improvement. The road committees provide the missing link between resources and the beneficiaries. As a result, the proposed project offers some of the social benefits of a community development program, such as popular participation in grassroots democratic action, leadership development, community experience in planning, prioritizing and

organization, increased awareness of local problems as candidate roads are compared and analyzed, and development of a sense of community and cohesiveness.

The Mission believes that with improved roads community residents will travel more often and more easily and have a higher exposure to all the modernizing influences of the wider society; e.g., education, commercial services, recreational activities, and participation in associations and in municipal and national government activities. Development programs of the GOP and international agencies will be able to reach their target population more easily. Improved roads in themselves will make possible an acceleration of the social change processes now underway and should increase the quality of life in the region while increasing income for small farmers. Unless special help is provided to this region, it will continue to offer few rewards to its inhabitants and will become an even more depressed Appalachia type area.

Finally, the project should benefit the target group by increasing competition between the truckers and/or moneylenders who travel into isolated areas to buy products directly from farmers. Lacking alternative means of transportation, farmers located on the worst roads are forced to wait until truckers or moneylenders drive by to pick up their production, usually at prices dictated by the buyer, not the farmer. A case in point is the coco pod used for making soap. Currently, truckers who brave the worst roads are paying only about $.25/kg for the pod while the market price on good dirt and paved roads is about $.90/kg. This extreme price differential would be redressed if roads were improved and more buyers could enter isolated areas, causing more competition between buyers.

In summary, the project provides substantial direct benefits to a clearly identifiable target group. Given available evidence it can be stated that the proposed project directly and predominantly benefits the target group, which consists of the most needy in one of Paraguay's most depressed regions.

C. Financial Analysis and Plan

Introduction

The total cost of activities to be financed under this project is $8.340 million. The A.I.D. loan will provide $5.2 million, the GOP $2.425 million and local communities $.75 million. The percentages contributed by each participant are A.I.D. 62%, GOP 29% and communities 9%.

A.I.D. will finance equipment, spare parts, hand tools, materials, technical assistance and a study covering the administration of secondary roads in Paraguay. The GOP will finance salaries of personnel to staff the new unit being created to administer secondary roads in the project area; salaries of the additional staff being added to regional road committees; salaries of equipment operators; maintenance of equipment; and materials, fuel and lubricants. Communities will finance 25 percent of the cost of fuel and donate unskilled labor, materials and rights of way access.

1. Financial Burden on Beneficiaries

The judgment of the project team is that beneficiaries will pay little more to have their roads improved than they now pay to have their inadequate roads maintained. The beneficiaries now pay the operating cost of maintaining their roads which is estimated at $100 per year per kilometer plus donated materials and labor.

Under the project the beneficiaries will pay about $115 per kilometer plus labor and materials to have their roads completely upgraded; thereafter, they will pay an estimated $100 per year to have the roads maintained. In essence the project beneficiary on the average will receive road improvements valued at $4,100 per kilometer for about the same outlay he presently makes just to keep his inadequate road open. The project represents a major breakthrough in appropriating government resources for improving roads serving small farmers.

2. Financial Plan/Budget Tables

a. Financial Plan

The summary financial plan follows

($000)

	A.I.D.		GOP	Local	Total
	FX	LC			
Equipment	$3,934				$3,934
Technical Assistance	300				300
Study	200				200
Materials		766	646	150	1,562
Administration			476		476
Fuel and Lubricants			571	150	721
Equipment Operations Salaries			344		344
Equipment Maintenance			154		154
Truck Drivers			226		226
Office Equipment			8		8
Labor				415	415
TOTAL Project	$4,434	$766	$2,425	$715	$8,340

A.I.D. Loan : $5,200

GOP Counterpart : $2,425 or 29%

Community Counterpart : $715 or 9%

b. A.I.D. Loan Costs

The equipment consists of three categories: heavy, office and field equipment, and hand utilized equipment (see page 6 Annex VIII). The heavy equipment will be accompanied by spare parts costing 20 percent of the value of the equipment. A factor of 10 percent has been added to the cost of all equipment to cover shipping and insurance costs. The equipment is to be purchased in two separate orders: the first to be consumated by June 1979 and the other by June 1981. An inflation factor of 15 percent was applied against the first order and a factor of 30 percent against the second (see pages 2-8 of Annex VIII). The cost estimates are based upon recent purchases by the DR and by private contractors working in Paraguay.

The technical assistance consists of training for heavy equipment operators, observation visits to other countries with similar projects, training for the person who is to provide assistance to regional and local committees, a long term social science consultant and a short term spare parts control consultant. The total cost of these services is estimated at $300,000 (see pages 10-12 of Annex VIII).

The materials item consists of 7,560 meters of reinforced concrete culverts with an average diameter of 80 centimeters. An inflation factor of five percent was added to this item. This is based upon price increases for culverts over the past couple of years. (See page 13 of Annex VIII.) The cost estimates are based upon recent purchases of the DR and of private contractors working in Paraguay. The institutional analysis is expected to require 36 person months of effort. The study is to take place in about three years. The cost per person month of service is placed at $5,500 (See Part II-B.6.f.)

c. Government of Paraguay Costs

The GOP will cover the costs of establishing and operating Caminos Vecinales, strengthening four regional road committees, the wages of heavy equipment operators and truck drivers, the costs of maintaining equipment, and the costs of culverts and bridges. The costs associated with Caminos Vecinales and the regional committees are estimated at $484,000. This includes for Caminos Vecinales the payment of salaries of 13 permanent employees and of three persons contracted for two years, the costs of office equipment and travel per diem and other support costs. This includes for each regional committee the costs of establishing four permanent positions and operating funds.

The equipment operators' wages of $344,000 include the costs of personnel needed to operate the bulldozers, frontend

71

loaders, motorgraders, tractors and other equipment used on the road. The vehicle drivers item of $226,000 includes the drivers of the dump trucks, lubrication trucks, water trucks and mobile shops. The maintenance item, $154,000, includes the mechanic and two assistants who will be assigned to each regional headquarters to do first echelon maintenance.

Fuel costs for the project are to be shared by the GOP and the communities, with the GOP paying $491,000. Lubricants consist of oil and grease; and their entire cost, $80,000, will be paid by the GOP. Materials costs consist of drainage culverts and of machined wood that is used to build bridges; the communities will contribute the wood for the log portion of the bridge. The GOP will purchase 5,040 meters of culvert and the machined wood for 2,800 meters of bridge. The costs of these items are estimated at $496,000 and $150,000, respectively.

d. Community Costs

The communities will furnish the labor, the logs needed for bridges and the cash required to pay one-fourth of the costs of fuel. To improve one kilometer of road will require about 51 person days of labor, logs for two meters of bridge and $115 cash for fuel. The donated labor was valued at $5.00, $5.50, and $6.00 per day for the first, second, and third years of the project, respectively. The total value of the labor to be donated to the project is $415,000. The logs were valued at $.11 per meter of wood one-inch square.[1] The total value of wood to be donated is $150,000. The community contribution for fuel is estimated at $150,000.

3. Examination of Community Contribution

This subsection discusses (1) the size of contribution communities presently are making to secondary road maintenance efforts; (2) the measures that will be employed to increase the community contribution to secondary road improvement activities; (3) the projected results of implementing the measures set forth in element (2); and (4) the size of the community contribution that will be needed to carry out the project.

The detailed data for element (1) are found in Annex VI. The data source for element (2) is from accounting records of the GDRC and a study performed by the USAID/Paraguay Office of the Controller. The sources for the recommended measures covered in element (3) are the above records, study, and conversations with personnel from the MOPC.

1/ In Paraguay, lumber is measured in inches and meters; width and depth in inches and length in meters.

The contribution to the project to be required of participating communities is based upon an estimate of the type of materials and labor that local residents can make available and the amount of labor, material and money that these residents contributed in accordance with the road conscription law in 1975 and 1976. In these two years, residents contributed the following days of labor to the maintenance of rural roads.

Year	Caaguazú	Cordillera	Guairá	Paraguarí	Total
1975	8,715	24,390	10,850	32,840	76,745
1976	11,290	21,925	17,480	26,025	76,720

and contributed the following cash to the rural roads taxing authorities:

Year	Caaguazú	Cordillera	Guairá	Paraguarí	Total
1975	$16,800	$1,060	$4,250	$6,000	$28,110
1976	$41,400	$6,200	$9,600	$17,000	$74,200

At the present time there is a significant difference between what the conscription law requires and what the GOP receives (see below). It is expected that this difference will become smaller as the project provides incentives for people to comply with the law, provides for better enforcement of it and provides for better accounting of the funds collected.

The three basic provisions of the conscription law that pertain to the potential income it could provide are: the people to whom it applies, the amount of the tax, and the distribution of the tax proceeds. The law applies to all males from ages 20 through 50 except for those on active military duty, post office employees, public utility employees, clergy, invalids, diplomats and a few other groups. The tax for the departments of the project for each age group is: ages 20-30, work six days on secondary roads or pay $3.58; ages 31-40, work five days or pay $3.17; and ages 41-50, work four days on secondary roads or pay $2.78. The cash collected is distributed as follows: 40 percent remains with the local committee, 10 percent remains with the regional committee and 50 percent is forwarded to the MOPC which gives it to the Ministry of Finance. The funds given to the Ministry of Finance are supposed to be used to purchase equipment for the secondary roads system. For a full treatment of the conscription tax law read Annex VI.

The 1972 census was used to determine the number of males residing in each department. These data were projected to 1976 and then adjusted to take into account those who are exempt from the conscription tax. Adjustments for exempt males were made in accordance with MOPC data which show that exemptions in 1976 averaged five, five, eight and five percent, respectively, for the departments of Caaguazú, Cordillera, Guairá and Paraguarí. Following this procedure the taxable males in 1976 are estimated to be those in the following table.

Age Group	Caaguazú	Cordillera	Guairá	Paraguarí
20-30	18,979	17,015	10,775	18,325
31-40	10,365	9,292	5,884	10,007
41-50	7,303	6,547	4,146	7,051

To estimate the potential labor obtainable, we need to know how many will opt to work. MOPC records show that 33%, 57%, 43% and 47% of the conscripts, respectively, in Caaguazú, Cordillera. Guairá, and Paraguarí provided labor in 1976. The others paid cash. Applying these percentages to the adjusted census data and the law enables us to estimate the potential income for each department.

The income potential for Caaguazú is 64,000 person days of labor and $81,000 in cash. The calculations for arriving at these figures are:

1.

Ages	Males		% Who Work		Days		
20-30	18,979	x	.33	x	6	=	37,578
31-40	10,365	x	.33	x	5	=	17,102
41-50	7,303	x	.33	x	4	=	9,640
				Total Person Days			64,320

2.

Ages	Males		% Who Pay		Fee		
20-30	18,979	x	.67	x	$3.58	=	$45,523
31-40	10,365	x	.67	x	$3.17	=	$22,014
41-50	7,303	x	.67	x	$2.78	=	$13,603
				Total Cash			$81,140

The local and regional committees would retain $40,500 and forward the other 50 percent to the MOPC.

Using this method the following figures can be calculated:

Cordillera : 100,000 person days of labor and $47,000 in cash. The local and regional committees would retain $23,500 and forward the remainder to the MOPC.

Guairá : 48,000 person days of labor and $39,000 in cash. The local and regional committees would retain $19,500 and forward the remainder to the MOPC.

Paraguarí : 83,000 person days of labor and $58,000 in cash. The local and regional committees would retain $29,000 and forward the remainder to the MOPC.

Summarized, the actual versus the potential income for each department from the conscription tax for 1976 is:

		Actual	Potential
Caaguazú			
	Days	11,290	64,000
	Cash	$41,400	$81,000
Cordillera			
	Days	21,925	100,000
	Cash	$6,200	$47,000
Guairá			
	Days	17,480	48,000
	Cash	$9,600	$39,000
Paraguarí			
	Days	26,025	83,000
	Cash	$17,000	$58,000
TOTAL			
	Days	76,720	295,000
	Cash	$74,200	$225,000

During the intensive review a number of defects in the administration of the conscription tax system were noted. Control of funds and bookkeeping are inadequate. For example, the minimum tax is $2.78, yet the average tax collected per conscript in 1976 in Cordillera was $1.84; in Guairá, $2.07. There are a number of possible explanations: many conscripts were taxed less than the law prescribes, tax authorities embezzled some funds, the records were inaccurate, or a combination of all three. The salaried bookkeeper proposed for each regional committee should ensure that regional records are improved, and he can also assist local committees to improve their records.

Tax evasion also appears to be a problem. To counter this, Caminos Vecinales will be staffed with two inspectors who will look for tax evaders and fine them. They will visit public gathering places and request to see evidence of tax payment. The Director of Caminos Vecinales is also proposing to restrict tax payments to the local committee in whose jurisdiction the conscript lives. Currently, taxes may be paid to any committee--a system which enables individuals to avoid payment by claiming that they paid their tax in a far off place and lost their receipt. Usually this is sufficient to stop many of the tax collectors. Restricting payment to the closest local committee will enable collectors to verify tax payments conveniently.

The presidents of local committees, who are nonpaid local residents, have the authority to grant tax exemptions. This has led to exempting friends in addition to those already exempted by law. The Director of Caminos Vecinales is looking into the feasibility of removing this exemption-granting authority from the local committees and restricting it to the regional committees only.

All the above "negative" incentives and others that may turn up should certainly improve tax collections. However, the project committee arrived at the opinion that the major motivation to increased collections will be a positive one: the availability of equipment. The people are currently receiving little for their conscription tax. The GDRC has only five road graders to service Paraguay's entire secondary road system. With so little equipment available, farmers living along a road needing grading before crops can be hauled to market are often forced to raise money to rent a grader from private or public sources in order to open the road. In these instances, conscription tax funds may or may not be available to defray partially the costs of renting the equipment. It is not unusual for farmers to pay the conscription fee and still have to pay the full costs of grading their road. Hence, there is little incentive to pay the tax.

The estimated inputs needed to improve one kilometer of road to project specifications are 51 person days of labor, 2,181 liters of diesel fuel, two meters of wooden bridge, nine meters of culvert and

the necessary road equipment (graders, bulldozers, trucks). The communities will supply all the unskilled labor, will pay 25 percent of fuel costs, and will supply the logs for bridges. The GOP, assisted by the A.I.D. loan, will provide 75 percent of the fuel, all bridge materials other than logs, all culvert material, all the road equipment, and will provide any skilled labor necessary to improve the road. For each kilometer of road improved, this arrangement makes the communities responsible for furnishing 51 person days of labor, 545 liters of fuel (at a cost of $0.21 per liter) and the logs needed to build two meters of bridge. Since the communities have labor and wood in kind, they will need to raise cash only to pay for the fuel, or about $115.00 per kilometer.

During the first year after the equipment arrives, 216 kilometers of road are to be upgraded, 54 kilometers in each department. This will require each department to provide 2,750 person days in labor, $6,180 in cash, and logs for 108 meters of bridges. The second shipment of equipment is to be incorporated into the project during the second year and an additional 552 kilometers of road are to be upgraded, 138 kilometers in each department. This will require each department to provide 7,000 person days in labor, $15,800 in cash, and logs for 276 meters of bridges. The expected output for the third year is 632 kilometers of road upgraded, 158 kilometers in each department. This will require each department to provide 8,058 person days in labor, $18,000 in cash, and logs for 336 meters of bridges.

The table below compares the actual resources captured for the local and regional committees in 1976 with the estimated resources needed to carry out the project. There appears to be plenty of labor available to carry out the project but an apparent large shortfall of cash in three of the four departments.

Year	Caaguazú	Cordillera	Guairá	Paraguarí
		LABOR		
1976	11,290	21,925	17,480	26,025
First	2,750	2,750	2,750	2,750
Second	7,000	7,000	7,000	7,000
Third	8,100	8,100	8,100	8,100
		CASH		
1976	$20,700	$3,100	$4,800	$8,500
First	6,180	6,180	6,180	6,180
Second	15,800	15,800	15,800	15,800
Third	18,000	18,000	18,000	18,000

Before discussing this shortfall, let us return to our discussion of deficiencies in administering the conscription tax. Inflation without a commensurate increase in the fee has provided an incentive to pay the fee in lieu of work. The going wage rate in the project area is about $3.58 per day; thus a conscript in age group 20-30 may provide six days work valued at $21.50 or pay a fee of $3.58. Committee records show us, however, that in spite of the large incentive to pay the fee, 43 percent of conscripts elect to work. The obvious question to raise is why so many elect to work. After examining this question, the project committee believes that, in fact, such a high percentage does not elect to work. Since labor contributions need not be shared with the Ministry of Finance there is a built-in incentive for road committees to report payment in labor, instead of cash. It is suspected that local and regional committees in many cases are collecting cash, but are entering labor in the books to be able to retain all the cash payments collected and not have to account for them.

According to MOPC records, in 1976 Guairá collected $9,600 and forwarded $4,800 through the MOPC to the Ministry of Finance. Nonetheless, Guairá is currently renting four road graders--two from a sugar refinery and two from DR-- on weekends and after hours to help maintain 500 kilometers of rural roads. The operating costs of a grader are about $50.00 per day. A grader can pass over one to four kilometers of roads per day. To keep a rural road net open requires about two gradings per year. Therefore, Guairá is spending between $12,500 and $50,000 per year to maintain its secondary road net.

Available data suggest that an average of 15 farm families per kilometer are located within the influence of these roads. The annual operating cost of maintaining them is about $100 (two passes, one kilometer per day). This represents a cost of $6.50 per year per farm family or 0.7 percent of total net income, and appears to be within the range that most farmers would pay.

As mentioned above, the cost of improving a road is higher than just maintaining it. At $115 per kilometer, the one-time road improvement cost will be approximately $7.70 for each family living within the zone of influence of the road. This cost, too, is considered to be an amount that the farmers would pay. Once the improvement is made, the maintenance cost would be facing the farmers, and as the experience in Guairá is showing, it is a cost that can be and is being paid.

Thus, although the data would seem to appear otherwise, Guairá is able to maintain a considerable distance of rural roads. It is the opinion of the project committee that the one time higher cost for road improvement can be paid by the local communities and that the cost of maintenance can also be met. For those cases where a shortfall occurs in a community's ability to meet all necessary costs, however, the Minister has agreed to a covenant in the loan agreement providing for MOPC to make up any such shortfall.

4. Delivery of GOP Counterpart

The final issue regarding financial feasibility is whether the GOP will deliver the counterpart required to carry out the project. The GOP budget contribution will be $130,700, $595,183, $835,309 and $863,808, respectively, for the first, second, third and fourth years of the project. To assure the needed MOPC budget increase, USAID has followed a strategy which takes into account the subtleties of obtaining counterpart in Paraguay.

Information for this task was obtained from a USAID study of the GOP budgeting process. The study included a review of USAID's experience with the delivery of counterpart, a study of GOP funds budgeted versus funds actually delivered, interviews with representatives of other donor agencies and conversations with personnel at the Ministry of Finance and other ministries.

The purpose of the analysis of the budgeting process was to develop and to test our observations regarding it. These observations were (1) it is difficult for a ministry to get an increase in its budget but it is easy to retain an increase, i.e., budgets are seldom cut; (2) ministers are reluctant to push hard for budget increases; they depend a lot upon donor agencies to present the hard facts to the Minister of Finance; (3) Congress makes only minor adjustments to budgets approved by the Ministry of Finance; (4) the GOP delivers all the funds budgeted; and (5) it is almost impossible for a Ministry to obtain a supplementary budget allocation. These observations were tested against actual experience of USAID, other donor agencies, and against a study of past budget related documents. The results confirmed USAID's observations and the behavior of the GOP respecting them is consistent. Indeed, the proof of the most important, number four, is based entirely upon quantitative data, i.e., programmed versus delivered funds.

The first statement is true of many governments; new activities are scrutinized carefully but ongoing activities are not. The second observation is probably unique to Paraguay. The Minister of Finance is such a powerful figure that most other ministers are reluctant to raise thorny issues with him. Therefore, when negotiating new loans, ministers let donor agencies negotiate counterpart requirements with the Minister of Finance. Not having a clear picture of this situation in years past has hindered A.I.D. operations. USAID lost considerable time because it believed ministers were negotiating budget increases with the Minister of Finance. When the deadline came and USAID had to set up a meeting with both the minister receiving the loan and the Minister of Finance, it was learned that the Minister of Finance had not even heard of the project. At first we thought this was the behavior of a particular weak minister. However our interviews with other donors revealed that this is the general case: most ministers are reluctant to ask for increased budgets if there is someone else who will do it for them.

85

The third and fourth statements show that efforts to negotiate counterpart conditions with the Ministry of Finance are well spent. The Congress generally makes only minor adjustments to budgets. Nevertheless, USAID would be wise to follow closely the status of counterpart funds as the budget proceeds through Congress and would also be wise to have counterparts advise the Chairman of the Finance Committee of the GOP commitment to the project. Finally, of most importance is the fact that the GOP consistently approves budgets that correspond to GOP revenues. And one can expect to receive 100 percent of the amount budgeted for an item.

The fifth statement explains why projects have been held up for lack of counterpart: counterpart was not entered in the budget or the amounts entered were insufficient. In some cases, when shortages occurred, attempts were made to obtain counterpart through a supplementary allocation to the regular budget. Since such allocations are practically impossible to obtain, requests for increased counterpart had to wait for the following budget cycle. This situation has delayed the delivery of counterpart needed to compensate for inflation and to compensate for the loss of a PL-480 program whose projected generations were to have been used as counterpart.

USAID has adopted a strategy for obtaining counterpart for this project, consistent with the above conclusions. The initial phase has already been put into action. Some months ago the Mission Director began discussing the project and counterpart requirements with the Minister of Finance. Discussions were also held with the Technical Director and the Undersecretary of Finance. After the counterpart requirements were firmed up, the Mission Director discussed them again with the Minister of Finance. He then requested and obtained a letter soliciting the project and committing the counterpart which contains not only the signature of the Minister of Public Works but also the signature of the Minister of Finance. In brief, up to this point all steps needed to assure the timely delivery of counterpart have been taken and no problems are expected.

Nevertheless, the Mission will work with the MOPC in arriving at the amount of counterpart funds to be budgeted for 1979. The budget will be sent to the Ministry of Finance in July 1978 when we will be working with the GOP to complete the conditions precedent. As the counterpart budget is being reviewed by the MinFin, the MOPC will be on hand to guard against any unjustified reductions, defending the items budgeted and, if necessary, reminding MinFin of its written commitment regarding the counterpart. Next, MOPC will follow the budget through the Congress. Even though the conditions precedent might be met, disbursements from the loan will not begin until it is clear that Congress will approve the counterpart. The process outlined above will be followed year by year to insure sufficient counterpart is budgeted for the following year.

USAID believes that the GOP will take seriously the negotiations for counterpart because of its experience with A.I.D. during the past few years. For example, USAID held up disbursement for about one year under the Agriculture Credit Loan awaiting counterpart. Then, the GOP was informed that the terminal disbursement dates for three loans would not be extended and that disbursements must be accelerated if the GOP was to receive all the funds. Disbursements were not accelerated, the terminal dates were not extended, and funds were deobligated. Finally, in May 1976, the GOP was notified that revenues from a tax earmarked for counterpart were insufficient and that disbursements would be suspended unless counterpart were increased. Later disbursements were suspended for one year until the counterpart was increased. In short, this record has established the Mission's credibility with MinFin.

D. Economic Analysis

This portion of the Paper has three major purposes (1) to describe the broad macroeconomic context of road use in Paraguay; (2) to explain how costs and benefits were calculated for the proposed project and (3) to show by a specific example what the B/C ratio will be for one of the roads selected for improvement. Because much of the analysis used herein is exceedingly complex it has been placed in Annex IX. In that Annex one finds the systematic analysis of data generated by the Small Farmer Survey, 1976, for the four target departments. Unless otherwise indicated all mathematical values in this section come directly from the Survey.

1. Role of Road Transportation in the Economic Development of Paraguay

a. Economic Situation and Prospects

From 1970 to 1975 overall GDP grew 6.1% per annum; GDP in the transportation and communications sectors grew 8.3%, and primary production (agriculture, cattle raising and forestry), 5.3%. 1/ According to the Plan, GDP will grow 7.6% from 1977-1981; transport and communications, 9.6%; and primary production, 6.1%. 2/ The country's transportation network, which provides the important link between agricultural producers and the domestic and international markets, had to develop rapidly to make possible the significant growth in the volume and value of exports during the period; the expansion of exports provided perhaps the principal stimulus to the overall economic growth that occurred. The value of commodity exports grew from $65 million in 1970 to $181 million in 1976 and $239 million during the first ten months of 1977. The volume of exports (valued at constant prices also grew by a significant 31% from 1970-1976). 3/

Agricultural products, both crude and processed, constitute normally about 95% of total exports. Since 1975, exports of construction materials and the services of workers to the Itaipú project have come to constitute a major source of export earnings. 4/ The expansion of exports, particularly during the last two years, has led to a very significant strengthening of the country's international financial position. The guarani is recognized to be one

1/ Plan Nacional de Desarrollo Económico y Social, Tomo II, Presidencia de la República, p. 17.
2/ Ibid.
3/ Cuentas Nacionales 1970/1976, Banco Central del Paraguay, p. 87.
4/ Foreign exchange receipts from Itaipú and Yacyretá amounted to $76 million in 1976.

of the hard currencies of the world, and Paraguayans take pride in being creditors to the International Monetary Fund. The country's net international reserves rose from $17 million at the end of 1970 to $112 million at the end of 1975 and $248 million in October 1977. Net reserves in October 1977 amounted to 75% of total imports of goods and services in 1976, probably more than would be considered to be adequate by international standards. At the end of 1976 the foreign debt service ratio amounted to 11% for public debt and 17% for public and private debt; these ratios might also be considered to be reasonably low by international standards. The country also has bright prospects for a continued growth of exports and international reserves during the remaining four years of the Plan, 1978-1981.

Economic growth has been stimulated not only by a rapid expansion of exports but also by an accelerating growth of investments. Investments as a percent of GDP rose from 15.1 in 1970 to 23 in 1975. During the same period public investments rose from 3.7% of GDP to 4.9%. Investments are projected to average 26% of GDP during the period 1977-1981. Investments in transportation and communications have been by far the largest of any sector during the period 1970 to 1975: they amounted to 41% of total public sector investments in 1970, declining gradually to 35% of the total by 1975. 1/

The result of heavy investment in the national road system 2/ was to increase total road mileage in the national network from 6,310 km in 1969 to 7,477 km in 1975; dirt roads increased from 4,899 km to 5,990; gravel roads declined from 601 km to 582 km and asphalt roads increased from 810 km to 905 km. 3/ Only asphalt roads are considered to be all-weather roads. While the waterways provided by the rivers that border the country on three sides constitute the chief commercial link to the outside world, the road system provides the only practical means of getting agricultural products from the farm to the domestic markets, and to the river ports which connect Paraguay with the international markets.

It is an impressive fact that as late as 1975 80% of national roads were dirt, 12% gravel, and only 8% asphalt. We estimate that the communal road system under the aegis of local and regional road committees (the road system we propose to assist) has

1/ Op cit, Plan, Tomo I, p. 123.
2/ National roads are financed by the Central Government; communal roads are financed locally.
3/ Plan Nacional de Desarrollo Económico y Social, 1977-1981, Sector Transporte y Comunicaciones, p. 2.

approximately 6,000 kilometers of dirt roads. 1/ Thus after adding communal dirt roads to all national roads, one finds that dirt roads constitute 89% of all roads in the country. When it is realized that dirt roads are not all-weather roads and that rains cause dirt roads to be closed 25% of the year, it is obvious that the country still has a long way to go to develop a road transport system adequate to an economy that is growing in real terms at 8% per year and whose exports increased by two-thirds in value during 1977. The continued dynamic growth of the economy will depend greatly on the continued expansion and improvement of the road system.

A World Bank report of 1965 states in its introductory pages that (a) there was a surprising unanimity of opinion among economists that the best way for Paraguay to emerge from a long period of stagnation was to expand its agricultural exports and (b) that to expand exports the road system had to be enlarged and improved. 2/ This perceptive view appears to have been quite correct. Since 1965 the country has increased its national road system from 4,668 km to 7,477 km in 1975 and has raised its exports from $57 million in 1965 to about $300 million in 1977. Moreover, increasing exports and agricultural output still constitute the main thrust in the country's development strategy, as expressed in the Five Year Plan.

The expansion and continual improvement in the quality of the road system has made it possible to increase greatly the size of the market for agricultural products. Farmers have responded to expanded market demand by raising output by cultivating more land, although increasing output by increasing yield per hectare may be more important in the future. This model may continue to be of dominant importance in agricultural growth as long as the road system continues to be extended and improved.

b. Financing the Road Program and Government Plans

The two essential elements of the government's five-year plan for roads are to extend the system of all-weather roads and to construct and improve access roads to market towns,

1/ According to Ingeniero Pettengill, Director of the Dirección General de Caminos, there are between 5,000 and 7,000 km of rural roads in the communal system.

2/ IBRD, Situación y Perspectivas Económicas del Paraguay, Anexo IV, El Transporte en la Economía del Paraguay, Dec. 27, 1965, pp 6, 7.

colonization areas and trunk highways. 1/ Neither the five-year plan for the country nor the plan for road sector has any information concerning future financing of the communal road system under local and regional committees, although the total length of communal roads (approximately 6,000 km.) is not much less than that of national roads (7,477 km.) under the Directorate of Roads. All external aid for roads so far has been used to finance the construction or maintenance of national roads. Expenditures on the national road system in 1975, for example, amounted to $7.7 million, 2/ while expenditures on communal roads (including greater Asuncion) amounted to only $870,000. 3/

Apparently the major emphasis has been on trunk line highways in the national road system. Since about half of all dirt access roads are under the communal (Road Committee) system, it seems that inadequate support has been given to this area. Local financial resources are not sufficient to permit a significant increase of investments in such roads. Consequently, inadequate attention is being given to an integrated national road program. AID's $5.2 million proposed program to improve communal roads is designed to correct the existing imbalance in the distribution of resources for roads and represents the first injection of external aid for this purpose.

The project will provide on the average $2,080,000 a year for the improvement of 1,400 km of dirt access roads in the communal system for four Departments (Cordillera, Caaguazú, Guairá, Paraguarí) that have a total of 4,044 km of communal roads. 4/ This represents 2.6 times the total spent annually on all communal roads in the country and by imputation about four times the investment in the communal roads of the four Departments.

The quadrupling of expenditures on this communal road system in the four departments of the central zone should make possible a significant increase in the volume of goods transported over these roads at lower costs, thereby enabling small farmers typical of this area to take advantage of a growing market and increase their output and income.

1/ Op cit, Plan, Tomo II, p. 127.
2/ Op cit, Plan, Sector Transporte y Comunicaciones, p. 36.
3/ Ministerio de Obras Públicas y Comunicaciones.
4/ Latin American Development Associates, Institutional Analysis of the Rural Roads Loan Project in Paraguay, Oct. 26, 1976, p. 2.

The Benefit/Cost section which follows will show in quantitative terms the direct advantages accruing to the rural economy from the project. There will be additional benefits not included in this calculation from the multiplier effect of growing income and output on the nonagricultural sector in the general area where roads are to be improved. By way of illustration, higher farm income leads to greater consumption of industrial goods, while a greater flow of farm products to market stimulates investments in agricultural processing facilities. Both effects tend to raise investments in industrial and commercial establishments which in turn increases income and employment. While it is difficult to generalize from a multiplier formula 1/ about the ultimate income effects of an investment in a developing country that lacks a capital market and has a scarcity of skilled labor and entrepreneurs willing to assume risks, indirect benefits in the form of higher income could well equal or exceed the original direct benefits.

Since there is probably a high correlation between the low quality of roads in an area and the prevalence of rural poverty, an improved road system should be one of the most important, if not the most important, means of direct assistance to the rural poor. By opening up outside markets to the subsistence farmer, better roads offer the farmer an opportunity to participate more fully in the monetary economy and thereby raise his output and income.

2. The Benefit/Cost Approach Used

To arrive at a quantitative technique for helping to judge the economic merits of the roads project every attempt was made to build upon the data available to the Mission in the Small Farmer Survey. To fully exploit those data, an agricultural economist, specialized in farm management, completed a sophisticated analysis of income, farm size and farm production in the four target departments (see Annex IX, Exhibit 2). This analysis focused on differences between high income and low income producers within each of the four farm sizes surveyed: 0-4.9 ha., 5-9.9 ha., 10-20.9 ha. and 21-50.9 ha. The analyst used production data to calculate composite changes in net crop income by farm size. These changes were weighted, depending upon the crop and livestock mix of the farm size group. In turn a total aggregated composite change/ha. was derived for each category of farm size (see p.13, Annex IX).

The analyst calculated the composite change in income/ha. under three conditions: that is, if total farm income increased by

---

1/ $\Delta I = \frac{1}{1-(S+M)}$ where: S = marginal propensity to save.
M = " " " import.

AIRGRAM

DEPARTMENT OF STATE

A.I.D. Re... Center Room 1656 NS

556

UNCLASSIFIED
CLASSIFICATION

For each address check one ACTION | INFO

DATE REC'D.

DISTRIBUTION
ACTION
LA
INFO
GC
IS
OA
ACONT
AAPC
SRD

TO - AID/W TOAID A- 160 x

70 MAY 20 PM 2 48

AID
C & A - BR

DATE SENT

FROM - ASUNCION

SUBJECT - Approval of Project No.526-15-790-018.1 - Tax Administration (Amendment No. 1 to PROP, dated 9/30/69)

REFERENCE - (a) AIDTO A-34; (b) TOAID A-317

FTA
STATE

The collections requested in the cited airgram follow. The difference in the 1968 figures from the PROP figures is due to source. It was much easier to get comparative figures for all years from the National Budget Record than from the Central Bank. Slight differences are due to treatment of different items but for comparative purposes these are just as useful.

	1965	1966	1967	1968
		(In 000 Guaranies)		
Indirect Taxes	1,096,842	1,172580	1,635,070	1,963,664
Income (Profits) Taxes	515,225	613539	705,663	732,474
Real Property Taxes	270,929	284243	304,160	359,490
Sales Taxes		-----	(Passed 1969)	

Regarding your second comment, "whether the 10% increase in tax revenue over the life of the project is high enough" etc., please note the report on page 8 refers to "an annual increase approximating 10% a year, without regard to the non-administrative influences". The reference to income tax following also relates to annual 10% increases, if three or four of the key, administratively desirable, articles recommended by the tax team were incorporated into the proposed new income tax law. We don't feel it would be useful to estimate how much more, or less, the law will produce, until it's enacted. We presently expect, as stated in the PROP, early passage of the law. Probable effective date July 1, 1970.

YLITALO

PAGE 1 OF 1 PAGES

DRAFTED BY	OFFICE	PHONE NO.	DATE	APPROVED BY:
TaxAdv:WBFlaherty:fr	Public Adm.		5/12/70	Actg.DIR:DRFinberg

AID AND OTHER CLEARANCES

Actg.PD:CDodson

UNCLASSIFIED
CLASSIFICATION

AID-5-39 (11-65) (Do not type below this line) PRINTED 8-66

two percent, by five percent and by ten percent. The five percent change in total farm income was finally selected by the analysts as the most reasonable outcome of the project. This increase in income will be brought about by relieving the following constraints: (1) the present transportation system is labor intensive -- deflecting scarce labor away from farm production; (2) the lack of roads reduces farmers' incentives to produce and market, largely because of losses that occur when roads are impassable; (3) poor rural roads inhibit the flow of new technological inputs, such as fertilizer and credit, into the target region; (4) the present high ton/km costs (US$5.00 T/Km) are excessive and eat directly into farmers' incomes; and (5) with easier access to farms, prices paid to farmers will increase as more middlemen compete for the produce.

The labor constraint is a fairly recent one in Paraguay's agricultural situation. Paraguay's Small Farmer Subsector Assessment and Constraints Analysis (p. 196), using data gathered in 1972, concludes that, "a pool of permanently unemployed labor does not exist on the small farms.../data imply/ labor utilization of at least 70 percent on the basis of 240 work days per year." After 1972, when researchers made this conclusion, the labor shortage became even worse. Both the Ministry of Agriculture and the National Technical Secretary for Planning report labor shortages and express concern for the future of the rural economy (see ABC newspaper, Dec. 25, 1977, pp. 9 and 16). Other details on the labor issue are discussed in the social analysis of this paper and may be consulted for further information. In general all these discussions make it clear that improved rural roads, insofar as they are time and labor saving, will benefit small farmers because they are presently forced to utilize excessive labor to get their goods to market. Furthermore, fossil fueled transport is more economical than animal powered transport when calculated on a T/Km basis. The former costs $.05-1.50 T/Km while the latter costs $3.00-6.50.

Since farmers are frequently unable to market their crops because of bad roads, there is little incentive to produce perishables. (Tomatoes and bell peppers are among the best examples of perishable crops.) A lively market for Paraguayan truck produce exists in Argentina; however, long delays in getting fruits to market cause spoilage. Paraguayan bus drivers do not like to pick up small farmers who have large bags of produce. Owners of large trucks (usually owned by middlemen buyers) are not eager to pick up small quantities of perishables and they do not pay well for such products because of the risks they take in traversing poor roads.

A recent study by a USAID contractor of the distribution of essential goods and services reveals that they are generally

clustered around municipal centers, usually reached from the capital on paved roads. These service centers (or market towns, as they are sometimes called) tend not to share their extension workers, their credit, and their fertilizers with surrounding or isolated communities which can be reached only on poor roads. Hence, the flow of new technologies to the target group is restricted by the road network.

There are three basic user cost savings that can result from road improvement: reduced vehicle operating cost; reduced time spent traveling and reduced cost due to a shift to a cheaper transport mode. For this project, only the latter is quantified and included as part of the change in income resulting from road improvement. The first one is not quantified because the motorized vehicle traffic is so low that savings from reduced operating costs would be negligible and would not warrant data gathering expenditures to estimate the savings. The same argument can be made for the reduced operating costs of other means of transport, especially for the excart mode. As for the savings in time spent by a farmer in transporting his goods to market, there will indeed be a saving. However, it is extremely difficult to assess the opportunity cost of the farmer's time saved, i.e., the income foregone while traveling. And, as with the vehicle operating costs, the time saving value for the individual farmer does not warrant data gathering expenditures. The inclusion of only the shift in transport mode in the B/C calculation thus understates the actual total transport cost savings that will accrue to the area within a given road's influence.

With road improvement, it is expected that small trucks (2-4 tons) and buses will enter where none entered before, or will enter with more frequency and regularity, that there will be a reduction in transport cost for each mode previously traveling the road, and that there will be shifts in mode, primarily from oxcarts to small trucks for a majority of the farmers.

Results from the Small Farmer Survey indicate that the oxcart is the main mode of transport used by the farmers in the four departments; the majority of the farmers have their own. Foot, animal and small trucks are means also used, but much less frequently. The table below shows the range of costs for excarts, small and large trucks, and buses. Information was not available for the foot and animal modes. However, experience in other Latin American countries indicates that foot transport is more expensive than animal, and both are more expensive than oxcart, and that the relative difference between animal and oxcart, and foot and animal is greater than that between oxcart and small truck.

TRANSPORT COST/MT/KM FOR DIFFERENT TRANSPORT MODES 1/

Transport mode	Surface	Cost/MT/KM
Oxcart	Dirt road	$3.00 - $6.50
2-4 Ton Truck	Dirt road	.50 - 1.50
10 Ton Truck	Paved road	$ .05
10 Ton Truck	Gravel/dirt	$ .10
Bus	Paved/dirt	$ .05

1/ See Annex IX for details.

As noted elsewhere, oxcarts and oxen are expensive to purchase (the price having almost doubled in the past few years to US$ 800), and they are costly to maintain. The oxcart is used on the farm and only for short distances to haul produce to a truck pick-up point. When farmers owning oxcarts also have access to truck transport, they generally choose the truck, thereby demonstrating that the cost of truck transport is cheaper to them than the cost of oxcart transport.

Since our data indicate that most farmers in the four Departments own or rent oxcarts to carry their produce to market, and that when the cheaper truck alternative is available, they use it, we use the difference in transport cost between the two modes as the estimate for transport savings resulting from road improvement. We expect that there will also be other shifts, such as from foot to bus and from animal to bus for those farmers having small amounts of produce for marketing. However, because most farmers will be shifting from oxcart to small truck and because the corresponding transport saving estimate is conservative, the analysts have chosen to use the latter modal shift to estimate transport savings. Data collected from several departments, as summarized in the preceding table, indicate that the range of oxcart costs per MT/Km is $3.00 - 6.50 and that for small trucks is $ .50 - 1.50. Taking the most conservative difference gives $1.50 ($3.00 - 1.50) which is the figure adopted for the illustrative example and suggested for use during the implementation phase of the project. More precise information will be obtained by the regional technician to either verify or adjust this figure.

Finally, there will always be those who choose to continue with their existing mode because of lack of cash, proper perception of relative costs, or proximity to the marketing point.

To account for these farmers, we include only 80% of the tonnage sold in calculating the total transport savings resulting from modal shifts. The economist at Caminos Vecinales will verify or adjust the percentage as he gains information from the various completed projects.

In summary: (1) The transport savings estimate is conservative since it includes only those savings from oxcart to small truck modal change; (2) the transport saving estimate is $1.50/MT/Km; (3) we assume that only 80% of the production sold receives such savings; (4) the savings apply only to those lands under production prior to the project.

On-farm prices paid to farmers will likely increase because more middlemen will compete to buy the produce. The traveling vendor and purchaser play a big role in marketing in rural Paraguay. They go almost any place their vehicle will take them. Vendors with regular motor vehicles cannot enter areas where the roads are bad and hence those areas become the territory of those having four-wheel drive vehicles. The same is true for product purchasers. They can purchase only from farms they can reach. Under these conditions, the competition in the markets used by the farmer is a function of the quality of the road. Hence one presently encounters a situation in Paraguarí in which a 56-kilogram box of oil palm pods sells for $.79 from farmers located on roads readily accessible to all types of vehicles and for as low as $.32 from farmers located near roads on which travel is restricted to only one type of motor vehicle, even though the distance from each farm to the refinery is the same.

In summary, the total impact of these benefits is estimated to be an average net increase in farm income of at least five percent. This turns out to be $145 and was arrived at by constructing a composite yield figure for mandioca, peanuts, cotton, and tobacco for the lowest income farmers and the highest income farmers in each size group. The average weighted difference between the lowest and highest farm incomes received in the target region by all groups of farmers is $2,900 and five percent of this is $145. See Annex IX for details.

Having expressed how benefits were calculated for the project, it is necessary to turn to the matter of costs. There are three basic cost elements: construction, maintenance, and administration. Details for the financial costs can be found in Annex IV, Exhibit 2. For the economic analysis, all transfer costs, such as social security taxes, must be substracted from the financial cost figures. If volunteer labor is included as a cost in the construction figures, it should be eliminated.

Construction Costs: Since the social security payments are so low relative to the total cost, failure to substract them will not appreciably affect the benefit/cost results. It is suggested, and the practice is followed in the illustrative example, that they be left in to simplify the calculations. Hence the financial construction cost is equivalent to the economic cost (assuming volunteer labor is not costed).

Administrative Costs: The total cost of MOPC support and overhead is estimated at $476,000 for three years. Eliminating those involved with tax collection gives $389,133 being spent on administrative and overhead costs directly related to road construction. Substracting the social security taxes gives the economic cost: $293,133. On a per kilometer basis, the economic cost is $210. This figure is multiplied by a given road's length to obtain the total annual cost of administration attributable to that road and is added to the construction cost.

Maintenance Costs: The financial cost is $269.64. Eliminating interest, reserves, and social security costs gives an economic cost of $185/Km. This figure is multiplied by a given road's length to obtain the total annual cost of maintenance.

3. Calculating the Benefit/Cost Ratio

a. Regional and National Roles in Coordinating B/C Analysis

As discussed in detail elsewhere, the project design is based on the premise that major road improvement decisions are made at the regional/local level rather than at the national level. A principal part of this decision making process is the conducting of the feasibility analysis and selecting of a road by a noneconomic/financial analyst. The simplified benefit/cost procedure described below, which will be employed by a regional technician in each of the four departments, was developed so that a nonprofessional could conduct the analysis with a minimum of supervision and training. It is a "cook-book" approach at the regional level with the major variables already calculated and the major algebraic manipulations completed, requiring only a few numbers and calculations to be supplied by the technician in order to obtain the B/C ratio for each road. The PP contains the current values for the major variables that will be used during the first six months. It is the responsibility of the economist at Caminos Vecinales to review periodically and update these values and make the changes in the equations for the regional technicians. In addition, as a condition precedent to disbursement, the economist will develop a manual based on the

procedures described in the PP which will be used by the regional technicians. Also, he will conduct seminars within the first six months to teach the technicians how to use the manuals, will receive copies of all analyses performed by the technicians, and will make at least bimonthly visits to each regional office to personally inspect work being done by the technicians, and to offer assistance where needed.

The simplification and cook-book development of the B/C analysis does not imply that its integrity or veracity has been reduced or impaired as a tool for road selection. Rather, by simplification we mean a reduction to algebraic equational representation of the conventional tabular B/C presentation (with rows representing each year of a project's life, with the costs and benefits appropriately discounted, their yearly present values added, and the B/C ratio determined).

b. Use of Farm Survey and Various Maps to Estimate Benefits

Because local road committees will be actively helping communities prepare applications for improvement of roads in their areas, and because the roads to be improved will be low cost, it is anticipated that there will be a large number of roads to analyze; and that a majority of these will have B/C ratios of at least one.

This anticipated high volume of rural road requests combined with their low cost/low volume ($4,000/km average), makes it impossible to conduct extensive survey work for each candidate road as is conventionally done in urban road feasibility analyses. The conventional analysis would not only be extremely costly, both absolutely and relatively, but time consuming as well. While such cost is not justified, it still is necessary to develop a method that adequately measures the benefits. For this project, the existence of a recent farm survey covering the precise regions where roads are to be constructed and excellent aerial photographic, cadastral, malarial, and topographic maps provide those in charge of the feasibility analysis with excellent data sources which can be used to prepare accurate and cost effective estimates of the income changes expected to occur as a result of road improvement.

c. B/C Equation to be Used for Analysis

The usual practice employed in valuing the various benefits and costs for rural road projects is to assign a constant value to each variable over a project's lifetime, e.g., road maintenance costs and road user savings. With these constant values being

used over time, the yearly discount factors can be summed for each variable and this result multiplied by the constant variable to give the same value that is gotten from the usual tabular format where the discount calculation is made on a yearly basis and then summed. Annex IX, Exhibit 2, provides a specific example.

In addition to the resulting greater ease in calculating the B/C ratio, the equational form allows for easier inspection of the relative importance of the several variables. For this particular project, inspection led to the elimination of the road salvage variable because its small discounted value had no appreciable effect on the B/C ratio (see illustrated example, and Annex IX, Exhibit 2). Most importantly, its elimination simplifies the calculation the technician must make to solve the B/C equation. The equation the regional technicians will be using is as follows:

$$B/C = \frac{PVB}{PVC} = \frac{dY_p\ (3.39) + dY_T\ (5.02)}{Rc\ (.870) + Maint.\ (4.15)}$$

where:

PVB = Present value of Benefits
PVC = Present value of Costs
dY_p = Change in Income from production changes
dY_T = Change in Income from transport savings
Rc = Economic Construction Cost of road
Maint= Road Maintenance Cost

3.39, 5.02)
.870, 4.15) = Sum of discount factors based on opportunity cost of capital of 15%

The manual developed by the economist at Caminos Vecinales will provide a step by step procedure for determining the values for dY_p, dY_T, Rc, and Maintenance.

In the following section the above formula is used to carry out an illustrative Benefit/Cost analysis of one of the roads to be improved under the project. The most conservative estimate of the area cultivated (25%) is used for the analysis. It is likely that far more of the area could be considered "under cultivation" if all pasture lands were included, which they are not. The conservative estimate was used because it was verified by United Nations sources. (Our data indicate that up to 50% of the area is cultivated.) Of course, if a larger area of cultivation were used the B/C ratio would be even more favorable.

THE COLONIA BOQUERON ROAD, Cadastral Map of Region
ACCOMPANYING BENFIT/COST ANALYSIS

4. Illustrative Benefit/Cost Analysis of the Colonia Boquerón Road

The road segment chosen as a representative example of the roads to be improved under the project is 4.8 km in length and is located in the Department of Guairá near the village of Borja and the Boquerón colony. The roadbed needs drainage and reshaping along its entire length, including several new bridges and culverts in low-lying areas where bottlenecks exist. It serves a small farm area where smallholders cultivate mandioca, corn, beans and sugarcane. Although smallholders claim land title to about 4 km^2 along each kilometer of road, the conservative assumption is made that only 25 percent of the area is under cultivation.

To obtain the B/C ratio, the methodology outlined in the prior section was utilized. From the preceding cadaster map and the transportation cost section the data were obtained to complete the sample analysis.

(1) Hectarage (25% of total area, 1,920 Has., under cultivation) 480.

(2) Farm distribution by size (est.) 1, 2, 3, 4 respectively 60%, 35%, 5%, 0%

(3) Change in production income
(a) weighted average of dY/ha
.60 x 52 + .35 x 27 + .05 x 24 = $42.10

(b) total production change 480 x $42.10..... $20,208

(4) Income from Transport Savings
(a) savings per MT/Km = $ 1.50

(b) weighted average for Tons/ha sold (p.17, Annex IX)
.60 x .77 + .35 x 1.28 + .05 x .97 .96

(c) hectarage 480

(d) total road length: 4.8 Km ÷ 2 = 2.4 Km

(e) total transport savings
$1.50 x .96 x 480 x 2.4 $ 1,659

(5) Salvage value $200/Km x 4.8 = $ 960

101

(6)	Economic construction costs Financial Cost $13,267 Plus: Administrative Cost (210/Km x 8 Km) = $ 1,008	$14,275
(7)	Maintenance Cost $185/Km x 4.8 Km =	$ 888

The Benefit/Cost equation that results from the five variables considered above can be expressed in general terms as:

$$B/C = \frac{dY_p\ (3.395) + iY_T\ (5.02) + \text{Salvage}\ (.249)}{Rc\ (.870) + \text{Maint.}\ (4.15)}$$

The salvage variable is included in the above calculations to prove the point that its omission does not appreciably affect the B/C ratio. Substituting the five values from the illustrative example into the equation gives:

$$B/C = \frac{20{,}208\ (3.395) + 1{,}659\ (5.02) + 960\ (.249)}{14{,}275\ (.870) + 888\ (4.15)} = 4.79$$

Dropping the salvage variable gives a B/C = 4.78, which is clearly an insignificant difference in the result of the analysis. Furthermore, dropping the salvage variable will make it easier for the regional technicians to do their future calculations. Hence, the salvage variable should be eliminated from the final work sheets used in carrying out the project.

The rather high B/C ratio derived from this example resulted from the fairly high concentration of farms, especially small ones, and the relatively low cost/Km of the road (only $2,746). However, the B/C ratio is not atypical of that which might be obtained in other target areas because there is such a high concentration of small farmers in the zone and because costs for road-building in the area are relatively low. Even had the production increase been two percent rather than five percent, the B/C ratio would be 2.212. Although it was not calculated, even a one percent production increase, attributable to better roads, would likely yield a B/C ratio greater than one. Likewise, had the road cost $8,676 per kilometer (the highest cost estimate for improving any of the roads included in the representative sample of roads inspected for this project) and had the income induced by the improved road amounted to five percent, the resulting B/C would be 1.89. And finally, had the road cost $4,100 per kilometer (the average cost estimate for improving all the roads included in the sample) and had the induced increase in income amounted to only two percent, the resulting B/C would be 1.7. Consequently, one could expect that most roads to be improved will meet the economic criteria.

5. Criteria for Selecting Roads

A road must meet the following criteria to be a candidate for improvement:

(1) It must serve a population of which the majority belongs to the target group;

(2) The road committee sponsoring the road must demonstrate that it will deliver the required cash and materials before construction begins, that it will deliver the required labor as construction progresses, and that it will maintain adequately the road after it is improved;

(3) The road connecting the improved section with the market must be of substantially the same quality as the improved road; i.e., it will not be closed to traffic when the improved road is open;

(4) The request must be accompanied by information adequate to enable the regional road committee to pinpoint the road on special road maps to be prepared by Caminos Vecinales;

(5) The B/C ratio for the proposed road must be at least one when the opportunity cost of capital is given a value of 15 percent; and

(6) Roads with higher B/C ratios or larger numbers of farmers will be given preference.

These criteria will be used with flexibility and will be changed if experience so dictates.

Although the criteria imply a complex study for each road, such is not the case because much of the information is available on maps being generated under the Mission's cadaster project. Maps like the one above of the Colonia Boquerón road are available for the department of Guairá and will be available for the other three departments by the time the selection of roads begins. A set of cadaster maps for its department along with other relevant maps and information will be located in the office of each road committee, and a set of the same materials for all four departments will be

located in the office of Caminos Vecinales. Specialists from the Cadaster project will provide technical assistance in using the maps.

The maps will provide information regarding the number of families located on a road, the size of the farms, the size of the area influenced by the road, and the crops grown in the area. The technician from the regional road committee will need to visit the area only to verify the location of the road, to prepare an estimate of the costs to improve the road, and to verify the mix of crops grown in the area of influence of the road.

The procedure followed by a local road committee to get a road improved would be almost the same as it presently uses to get a road graded which is to advise the regional office that a group of farmers have, in hand, the money necessary to pay the costs of grading their road and ask when a grader will be available. One difference is that the location of the road will need to be described with precision. With the road description, the regional committee will be able to determine whether the road meets the selection criteria. To obtain a preliminary B/C ratio the technician will use the simplified formula described earlier in this section. Of the five variables, the area of influence of the road will be provided by the maps; the induced income increase will be provided by a manual containing information like that found in Annex IX; the transport savings per kilometer (now $1.50 Ton/km) will be provided annually by Caminos Vecinales; the cost of improving roads will be $4,100/km until experience indicates this should be changed; and the maintenance cost will be provided annually by Caminos Vecinales. In addition, the map showing the size of farms along the road will enable the technician to determine whether the majority of the population to be benefitted are small farmers.

In summary, other than the cost data, the maps will provide all information needed to perform a pre-selection check of the roads. If the check turns up positive results, the technician from the regional road committee will visit the road site to prepare a cost estimate for improving the road and to verify data obtained from the maps. He can then perform the final analysis and schedule the improvement of the road. The scheduling will take into account mainly the location of the road in relation to others to be improved and when it would be most convenient for the farmers to provide the labor. Special factors that might be considered are an urgent need of a road to market crops or a population served by only one road. Other things being equal, preference should be given to roads that provide the only link between a farm population and a market town.

IV. IMPLEMENTATION ARRANGEMENTS

A. Institutional Analysis

1. The Directorate of Roads

a. Brief History

The Directorate of Roads (DR) has been a part of the MOPC since the latter was created under Decree Law Nº 2, dated February 18, 1940. This decree reorganized the national government and created the predecessor of the MOPC which was called the Ministry of Public Works and Colonization. The Directorate of Public Works, Railroads, Roads and Bridges (predecesor of the DR) was created at the same time. The MOPC received its current name, Ministry of Public Works and Communications, under Decree Law Nº 17,511 dated Jan. 22, 1947, which also changed the name of DR to the Directorate of Public Works, Roads, Hydrology and Bridges. The DR received its current name, Directorate of Roads, under Decree Law Nº 22 dated March 5, 1954. It was not until 1968, however, that a formal reorganization of DR was approved (Decree Law Nº 75, December 31, 1968) which resulted in its present structure. Although DR has increased its resources as its workload required, it did not undergo any major organizational shifts since that time. In 1973, however, the maintenance department of DR was strengthened and its duties and responsibilities expanded so that it is now the dominant department in the Directorate.

b. Legal Responsibilities

DR is charged by law with the planning and implementation of the national road network and with systematically increasing the road inventory in the country and keeping it in a serviceable state. The national road network is defined as including trunk, departmental and neighborhood roads. In carrying out this mandate, DR is empowered to (1) contract for engineering and construction services; (2) seek investment capital from national and international sources; and (3) develop the necessary technical capacity through a trained cadre of personnel. DR also has other duties which include (1) the operation of a ferry system across wide rivers that are not yet bridged; (2) the regulation and control of heavy vehicles over the national road system; and (3) representing Paraguay in international road meetings and conferences.

DR has exclusive jurisdiction over matters of eminent domain in securing rights-of-way for the national road system, be it trunk, departmental or neighborhood, in both rural and urban areas.

c. Organization

A detailed organizational chart of DR is shown on page 27. The Director of DR supervises the work of three technical and one administrative departments. These are the departments of engineering, maintenance, equipment and materials, and administration. In addition, DR has a public information office and a legal advisory group.

The engineering department is responsible for the design, construction, upgrading and betterment of roads, bridges, airports and other transportation facilities. The maintenance department undertakes the conservation of roads, bridges, airports and ferries, and carries out its functions through field maintenance offices. The equipment and materials department procures and maintains all equipment needed to support the other departments. These include heavy and light construction equipment, machinery, support vehicles, tools and implements, spare parts, fuels and lubricants. The administration department provides general administrative support, personnel actions, supply requisitions, and accounting.

DR does not have an internal audit capability nor does it undergo regular audits of its management and accounting systems by MOPC or any other government or private accounting organization. Although DR does some road construction, it remains primarily a maintenance organization. This is clearly evidenced by the dominant role that the maintenance department plays in the activities of DR. For example, in 1976, the maintenance department was allotted 75.8% of DR's national budget, 1/ with the remaining 24.2% of the budget being shared by all other departments.

d. Resources

DR is entitled by law to certain resources above and beyond its annual national budget allocation. These include certain gasoline and fuel tax receipts, road tolls, proceeds from sales of scrapped equipment, receipts from the operation of the ferry system and loans from international development and financial organizations. In 1976, these resources totalled $11,968,320 from national revenues (including the DR budget) and an additional $33,761,070 from international financial organizations. In 1977, it is projected that these accounts will be $11,368,992 and $22,085,680, respectively.

At present, DR employs 1,370 persons, distributed as follows: office of the director, 8; administration, 40; equipment and materials, 151; maintenance, 1,052; engineering, 54; and the road police, 65. The DR appears to be decentralized with a total of 1,154

1/ Not including loans by international organizations.

106

employees (belonging to all departments) stationed in the field. Only 216 people (19%) are stationed in Asunción, including the central shop and warehousing facility. Again, the manpower distributions shown above reflects the dominance of the maintenance department which employs 77% of the workforce.

DR has, in recent years, experienced a large personnel turnover. This has been due mainly to disparities between the salary levels of its employees and the salaries of similar professionals employed by the private sector. In 1971, a salary comparison survey was made under a World Bank technical assistance project. The results of the survey indicated that DR salaries were 46% lower than salaries paid comparable employees in the private sector. A job classification system was devised to upgrade salaries. This system was not completely implemented, but the MOPC is now aware of these disparities and has developed an ad hoc system to keep its salaries on par with those of the private sector. DR continues to suffer a steady loss of its experienced civil engineers and technicians to consulting engineers and construction contractors, particularly with the increased construction activity related to the Itaipú hydroelectric project. (Nevertheless, no serious problem is foreseen to obtain and retain the types of employees to be hired for this project.)

DR has 138 pieces of highway construction equipment, and 163 assorted trucks and heavy-duty vehicles. This total represents a mix of different makes and sizes and appears to be reasonably well maintained. The records of the central shop at San Lorenzo, near Asunción, indicate that 85% of this equipment is kept in operable condition. Only 15% is sidelined for maintenance and repairs at any point in time. Most of this equipment is assigned to the road maintenance division.

DR does not have a program for capital investment and depends almost exclusively on external financing to augment its new equipment pool and to replace scrapped equipment. In 1976, less than $10,000 of DR's resources were spent for equipment purchases while $650,000 from an IDA loan were used to procure new equipment and spare parts.

The DR has its central shop and warehouse facility at San Lorenzo, approximately 14 kilometers east of Asunción. The shop was inspected by the project committee, and is considered to be an orderly and well run operation. The warehouse section was recently expanded to accommodate additional spare parts, and a cursory inspection indicated that the stock control and supply functions being carried out were reasonably efficient.

e. Experience in External Financing

DR's experience in the management of externally financed projects consists of two World Bank loans and a third loan by the International Development Association (IDA). The first of these loans ($6,000,000), successfully completed in 1975, financed equipment purchase, out-of-country training, and technical assistance. Additionally, an equipment operation and maintenance training program was set up within DR under this loan. The second World Bank loan ($14,500,000), scheduled for completion in 1979, will provide financing for equipment, spare parts, warehouse expansion, and technical assistance in road maintenance. The third loan ($11,000,000) is supporting rural development activities in three colonies in the central and eastern parts of Paraguay. One element of this rural development package is the construction of 310 kilometers of low cost roads.

f. Current Involvement in Rural Roads

Although its legal decree makes DR responsible for the rural roads, DR has traditionally had only a limited involvement with them. It has cooperated with the local and regional road committees by providing heavy equipment and personnel to construct rural roads after regular working hours and on weekends. Under this arrangement, the local community contributes fuel, operators' salaries and lodging.

g. Caminos Vecinales

Caminos Vecinales (CV) will be created as a new unit to be responsible for project implementation. Legally, it will be under the Minister, but in practice, it will be under the DR. CV will be headed by a civil engineer and will have a staff of 15. It will have two sections, technical and administrative, which will work closely with the regional road committee staffs.

The RRCs in the four project departments will be under the direction of CV. A technician will direct each RRC and the staff will include an administrator, equipment operators, mechanics and support personnel. The RRCs will be the focal point of the project and will be responsible for subproject analysis and approval, planning work schedules for construction and maintenance, and supervision of construction.

The capacity to implement the project at the regional level will be a critical factor in the success of the project. Therefore, a technical assistance component of the loan has been planned which will focus on developing this capability. By working with the training specialist of CV as well, the technical assistance will develop the institutional capacity in CV to provide necessary assistance to RRCs once project inputs have terminated.

h. Summary

From the foregoing, it is clear that DR has a basically sound institutional structure, but that this structure requires some streamlining and refinement. The need for an institutionalized internal audit capability within DR is probably the most glaring deficiency in the institutional structure of the Directorate.

DR has received considerable technical assistance under World Bank loans in the areas of personnel administration, equipment maintenance, general accounting and budgeting. The results of these technical assistance and training efforts have been mixed, but, on balance, have led to considerable improvements. For example, since 1971, most expenditures by all departments of DR have been kept reasonably within internal budget ceilings. In addition, all employees have been receiving their wages and salaries timely, as compared with a three month delay in the delivery of paychecks in 1970.

2. The General Directorate of Road Committees (GDRC)

a. History and Background

The rural road committee system was created under Decree Law Nº 3639, dated March 31, 1951. The purpose of the system was to marshal local resources, particularly volunteer labor, for the construction of neighborhood roads in the rural areas of Paraguay. The creation of this system implied that the national government could not respond to all the rural road needs of the country through its central road Directorate, DR.

The system consists of five discrete elements: (1) the Road Conscription Service; (2) GDRC; (3) the Road Committee of the Capital (RCC); (4) the Regional Road Committees (RRCs); and (5) the Local Road Committees (LRCs). The nominal head of the whole system is the Director of GDRC, appointed by the President and responsible directly to the Minister of Public Works and communications. He is on the same organizational level as the Director of Roads.

The rural road committee system has not undergone any major changes or modifications since its inception in 1951. However, it has evolved over the years into a politically dominated organization, with weak and ineffective central leadership, and carried along mostly by initiatives of private groups.

b. The Road Conscription Service

The law that created the road committee system obligates men between 20 and 50 years of age to either volunteer their labor for road work, or pay a conscription fee. The number of days to be worked has been fixed since 1951, but the amount of the conscription fee has been pegged to the minimum wage established by the government. Exempt from this service are certain government officials, the military, the clergy, invalids, members of foreign diplomatic and assistance missions, primary school teachers and members of the road committees. Work requirements and current conscription fees are as follows:

Age Group	Annual Work-days Required	Annual Conscription Fees	
		Asunción $/E	Interior $/E
20-30	6	4.37	3.58
31-40	5	3.97	3.17
41-50	4	3.58	2.78

Conscription fees thus collected are distributed as follows:

In the Capital		In the Interior	
GDRC	50%	GDRC	50%
RCC	50%	RRC	10%
		LRC	40%

Annex VI contains a complete review of the Road Committee System, including a discussion of the conscription service and recommendations for its improvement. The Financial Analysis also discusses the conscription services.

c. Local Road Committees (LRCs)

The collection and accountability of conscription fees and the utilization of conscripted labor were made the responsibility of the Local Road Committees. It is estimated that there are 206 LRCs in Paraguay. Of this total, 41 are located in the immediate area of Asunción; and 61 are located in the four departments that comprise the project area. Generally, LRCs are located in District capitals and are responsible for all compañías (villages)

in that area. Although the lines of jurisdiction are very flexible, the precise area of responsibility of each LRC is clearly established in all cases. The president of the LRC is handpicked by the parent Regional Road Committee and is normally a respected leader of his community. The presidents of LRCs take their appointments seriously and carefully carry out instructions reaching them from the RRC. LRCs consist of three members appointed for a one-year term. Almost all LRCs have offices, but few have salaried employees.

In addition to the collection of the conscription fee from subject community members, LRCs have other functions that include (1) soliciting and aggregating road project proposals; (2) suggesting a priority listing of these project proposals; (3) granting relief from the requirements of the conscription law and imposing fines on violators within their jurisdiction; (4) constructing and maintaining rural roads in their areas; and (5) carrying out their internal administrative and budget functions. The LRCs are directly responsible to the Regional Road Committee in their area.

d. Regional Road Committees (RRCs)

RRCs are located in the capital cities of their departments. There are 13 in the country in addition to the Road Committee of the Capital (RCC). The five members of an RRC are officially named by the President from among candidates suggested by the governor, the highest government official in the department. RRCs generally have salaried secretaries and some have inspectors to supervise road projects. Some use collectors to enforce the conscription system by checking travellers' conscription booklets (which must bear an annual conscription stamp) at traffic control points. The RRC is usually a one-man operation and only rarely does the whole committee function as a body. Generally, the president is an older local resident active in local business or politics. Several have close friendships with the President of Paraguay. RRCs usually maintain neat offices, equipped with a desk and a filing cabinet.

The functions of RRCs consist of (1) supervising the activities of LRCs in their respective departments, including assignment and removal of personnel; (2) contracting technical and administrative personnel to carry out studies, budget estimates and supervision of road work in their areas; (3) submitting project and budget estimates to GDRC; (4) undertaking projects up to approximately $750 on their own authority; (5) extending the time limit required for payment of conscription fees; and (6) levying fines for noncompliance in their respective areas. Much of the work of an RRC, however, consists of handling requests for conscripted labor for use in constructing rural roads. Communities usually forward crudely written requests for a certain number of men to do a specified road construction or maintenance task. The president

of the RRC calls on LRCs in his area to provide the labor. Upon completion of the work, the road conscription booklets of the workers, usually sent in a packet to the RRC president's office, are validated and returned to LRCs. RRCs receive conscription payments and validate booklets on a daily basis. They service both individuals and LRCs. Although most offices keep readily accessible records of such payments, their accuracy and completeness apparently depend on very informal accounting systems devised and supervised by the president. Abuses in the collection of and accounting for conscription fees are reported occassionally.

The Road Committee of the Capital (RCC) is an expanded version of an RRC, and carries out similar functions in the Asunción area, including the department of Central.

e. The General Directorate (GDRC) Central Office

The GDRC operates out of two rooms in the MOPC building. In addition to the Director General, who is named by the President, it has a staff of eight people. These include a topographer, an accountant, two draftsmen, three administrative assistants and one secretary. Three grader operators are also included in the central office budget.

By statute, the GDRC is charged with (1) the approval, modification, or rejection of project proposals submitted by RRCs in excess of $750; (2) the supervision of all rural road committees in Paraguay; (3) the preparation of the national budget of the central office; and (4) the administration of conscription funds forwarded to it from LRCs and RRCs.

Requests for help with a specific project come to this office from all levels of the system, as well as directly from the Minister and others in high political positions. The attention given a request depends primarily upon who sponsors the project. Most requests for small projects consist of road building, maintenance, bridge construction and minor drainage work.

A high degree of local autonomy exists in the road committee system, not so much because it is permitted by the GDRC, but rather because of the political structure of the system. Moreover, GDRC has little to offer RRCs when they comply with its instructions, and even less to withhold from them if they fail to comply. As a result, the GDRC sits helplessly by as some RRCs, at times, openly refuse to send the full percentage of conscription fees due it under the law, claiming pressing local needs.

A large part of the energies of the central office is spent in managing the routine operations of the road committee

system. The stamps affixed to the road conscription booklets to indicate compliance either through work or fee payment are controlled by the GDRC and distributed by it to RRCs. However, these stamps, report forms, and other materials are frequently in short supply which leads to adopting make-shift procedures, making it easier to abuse the system.

f. Resources

The resources of the road committee system derive from conscription fees, conscripted labor and fines. Conscription fees collected from all departments in 1975, the last year for which data are available, totalled $108,000 and have been increasing at a variable rate. The total number of individuals who complied with the conscription law in 1975 is estimated at 35,000 persons. The GDRC is not authorized to contract national or foreign debts and must carry out its operations with these limited financial resources.

The combined equipment resources of the road committee system, excluding those of the Road Committee of the Capital, consist of two graders (1958 vintage) and five graders purchased in 1975. Two of the seven graders are now inoperable and awaiting major repairs. The road committee system does not have an equipment maintenance capability and depends on DR for such services.

g. Experience in Rural Roads

In a report to the Senate of Paraguay in August, 1976, the GDRC stated that the total road committee system had built 5,600 kilometers of neighborhood rural roads since 1951. Of these, 1,300 kilometers were built by the RCC. The following brief table illustrates these accomplishments for the latest three years for which data are available:

	Kilometers of Road Constructed		
Year	LRCs and RCC	LRCs and RRCs	Total
1971	53	185	238
1972	17	248	265
1973	75	167	242

The GDRC technical staff reported having accomplished studies and road designs for nearly 60 projects totalling over 1,000 kilometers of road since 1952. The GDRC believes that a significant accomplishment of the program has been to focus attention on the need for roads and to develop an increased sense of local responsibility.

h. Experience in External Financing

The GDRC has had no experience in external financing.

115

i. Summary

Perhaps the greatest asset that the road system has is that it originates at the grass-roots level of rural Paraguay. Under this system, the beneficiaries of a project have a say at all stages of its development, and must make labor and other resource contributions through a known, accepted, formalized, and functioning system to get their roads repaired. Although the GDRC will not be a direct participant in the project, its unique committee system will be one of the strengths which the project will retain and hopes to improve.

3. Institutional Roles in Project Execution

a. Rationale

Initial Mission evaluation of the current rural road structure in Paraguay indicated that, ideally, GDRC and DR should be combined into one national road directorate. These findings are consistent with the recommendations of a recent study by World Bank. This study suggested that, for the formulation and implementation of a transport policy, it was necessary to have a "restructuring by the Directorate of Roads....In addition to its present assignments.../it/ would be in charge of the neighborhood network which is currently entrusted to various road committees, and these committees would be abolished."1/ However, political realities dictate the use of the existing structure. For example, there has been from time to time open criticism, led by a group of senators, to the continuing existence of the road committee system as the responsible entity for rural road activities; and early in 1976 the Paraguayan Senate formally requested a report on the system. The resulting MOPC report, with the concurrence of the President of the Republic, made the government's position clear that the committee system is working well and is advantageous to the government. On August 30, 1976, the Senate approved the report.

The Mission also believes that the road committee system, with its reliance on local participation for its operation, is advantageous to the government and that the system should be maintained and strengthened. Where the committee system should be located within the MOPC bureaucracy, however, is an issue which has been examined carefully during intensive review.

Based on the above analysis of each directorate, the project committee initially proposed that the two directorates (GDRC and DR) share responsibility for project execution. The strategy was to draw upon the strengths of one to help remedy the weaknesses of the other through a technical assistance package.

1/ World Bank, Estudio Final del Transporte, Informe Final, Part I, July, 1973.

Each directorate would have been entrusted with those elements of the project with which it had most experience. Further review of the implications of this institutional arrangement, however, led to the development of an alternative strategy: Creating an independent unit (Caminos Vecinales) directly under the Minister.

The problem with the initial strategy was one of inadequate coordination among all MOPC departments, and too much fragmentation of responsibilities. The Project Committee considered that a single organization to implement the project was more appropriate.

To implement this strategy, Caminos Vecinales will be established under the Minister but will, in practice, work under DR. CV will be responsible for the road committee system in the four project departments; the GDRC will stay intact and retain responsibility for the committee system in the remaining nine departments. Under the strategy, this institutional arrangement will be experimental. An indepth study will be conducted during the third year of the project to determine, and make recommendations regarding, the most appropriate institutional structure for the entire road system in Paraguay.

b. Role of the General Directorate of Road Committees

The GDRC will not participate directly in project activities. The road committee system in the four project departments will be transferred to Caminos Vecinales. GDRC road equipment in these departments will be moved to other locations outside the project area, where the GDRC will continue to control and supervise the road committees.

c. Role of the Caminos Vecinales

The CV will be responsible for all activities related to project implementation. These include: (1) conduct evaluation surveys and the development of cost estimates for candidate roads; (2) purchase, receipt, and delivery of all project equipment to the different project sites; (3) operation and maintenance of this equipment, including development of work schedules; (4) supervision of the construction of all bridges and minor drain structures; (5) assurance of local participation in selecting, screening and establishing priorities for potential subprojects; (6) assurance of timely availability of volunteer labor and local contribution when a subproject commences; and (7) assurance that all roads completed are maintained in accordance with a schedule to be established upon completion of the initial work effort. A detailed project organization chart is shown on pages 26 through 29.

115

d. Project Coordination

The institutional arrangements of the project are such that, at the central level, coordination with the departments in MOPC is greatly facilitated. A more critical level, however, will be the regional level. To facilitate exchanges between the technical and administrative staffs at each RRC, regular meetings will be held to share experiences and to resolve implementation problems. These meetings will also be used to coordinate planning efforts in order to avoid projects which are duplicative and to promote those which are complementary.

e. Technical Assistance

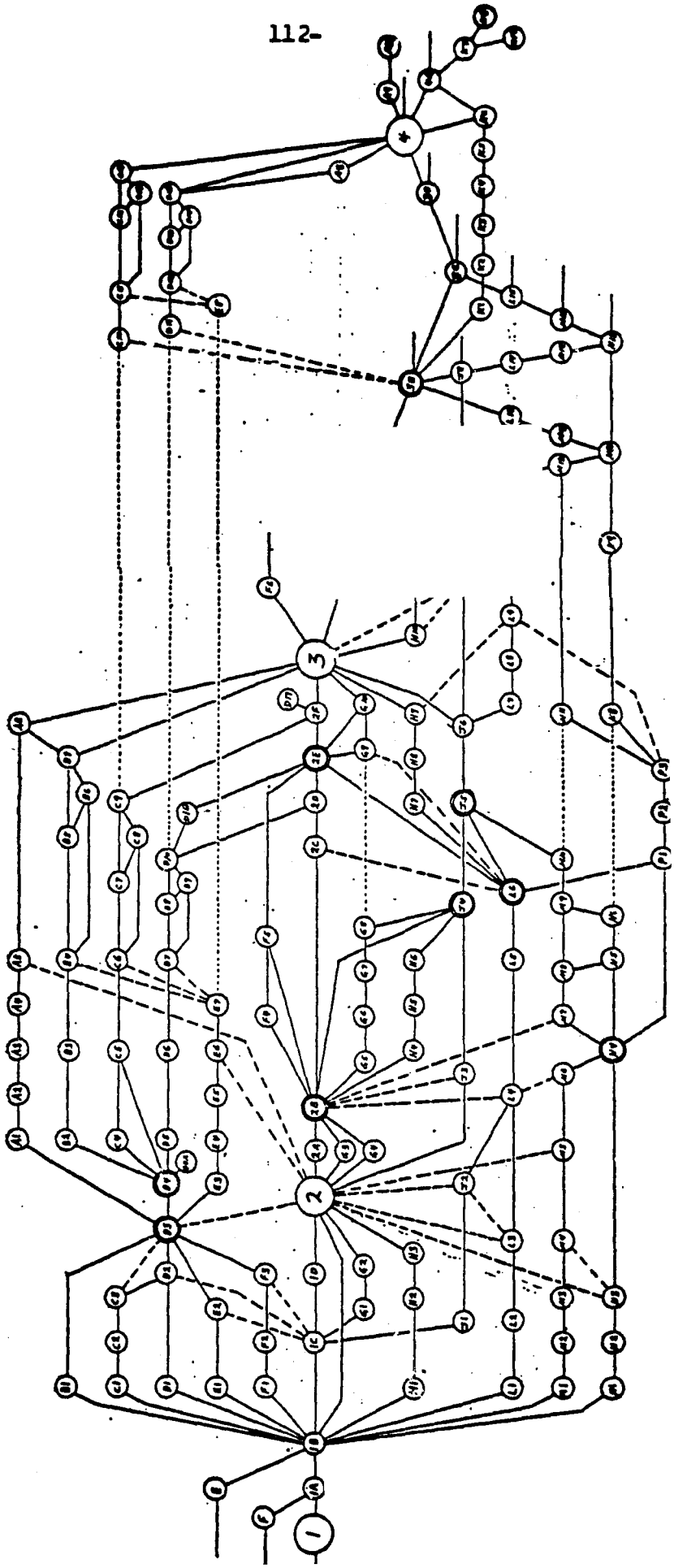
Given technical capabilities already existing within DR, which will be available to CV, the amount of technical assistance initially considered for this project was reduced. The long term technical assistance will consist of a social scientist, who will work with the training specialist in CV. These two specialists will focus on developing training manuals and seminars for transferring technical knowledge to the RRC staff; for identifying, analyzing and selecting subprojects; for promoting the project at the local level, including awareness training for LRCs and RRCs regarding the importance of a well maintained rural road system to rural development; and improving collection and accounting procedures for the conscription fees. They will also have a goal of creating the institutional capacity within CV to continue on its own with training and providing technical assistance to the various road committees at all levels.

Those short-term specialists will also be provided during the early stages of the project to help develop equipment specifications and prepare documentation for IFBs; to train equipment operators; and to assist in adapting the existing DR warehouse system to accommodate the spare parts to be purchased by the project.

B. Implementation Plan: The following is a summary of the implementation plan. (See Project Implementation Flow Diagram)

Event	Action	Target Dates	Responsible Party
1	Loan Authorization	2/15/78	AID
1B	CV Unit Created	4/14/78	MOPC
1C	Execution of Loan Agreement	6/16/78	MOPC-AID
D3	CV Procurement Section established and in operation	8/1/78	MOPC
D4	Specifications developed for all project construction equipment, vehicles, spare parts, etc. and procurement actions initiated	11/1/78	MOPC
2	Conditions Precedent met	12/4/78	MOPC
2B	GOP's Counterpart funds available	1/2/79	MOPC
L4	Four Regional RRC Directors hired and training tour scheduled	2/1/79	MOPC-AID
N4	Training Specialist and Sociologist hired and on board	3/1/79	MOPC
J4	Remaining CV Unit staff mobilized, office equipment available, etc.	5/2/79	MOPC
L6	Training completed by the four regional RRC Directors	6/1/79	MOPC
2E	Construction equipment arrives and equipment operators hired	9/1/79	MOPC
J6	Project maps developed and subprojects for first six months of operation selected	12/15/79	MOPC-AID

117



Event	Action	Target Dates	Responsible Party
H9	Project Administration Manual developed by CV and RRCs and approved by AID	12/15/79	MOPC-AID
P3	Project Operation Manual developed by Sociologist and approved by AID	12/15/79	MOPC-AID
3	Vechicle and spare parts arrive, equipment and operators trained, and road construction operation initiated	1/2/80	MOPC
3A	RRC, LRC, RPC staff trained to use Operations Manual, and quarterly operation cycles initiated	4/1/80	MOPC
A7	Spare parts supply specialist completes setting up RRC's spare parts and supply system, and demobilizes	5/2/80	MOPC
3B	Second order for construction equipment and vehicles placed	7/1/80	MOPC
4	Second shipment arrives	4/1/81	MOPC
4A	Consulting firm for project evaluation contracted and evaluation initiated	7/1/81	MOPC
A10	Spare parts supply system reviewed by Supply Specialist	7/15/81	MOPC
K8	Evaluation study completed and report reviewed by MOPC and AID	10/15/81	MOPC-AID

C. Role of USAID

The project is complex in that it involves the active participation of several road committees in subproject proposals and implementation. However, it does not involve any unusual administrative features for AID. All dollar procurement for equipment will be done under a normal letter of commitment procedure. The dollar procurement of services will be with a direct payment procedure, or with a letter of commitment issued to AID. AID assistance will be required in preparing for the procurement of the road construction equipment and spare parts. Also, assistance will be required from the USAID training offices to prepare the PIO/Ps for training the four RRC directors. Otherwise, no additional AID staff commitments are considered necessary. The USAID Regional Engineer will be assigned as Project Manager, and he will work closely with the MOPC and CV director during the initial stages of meeting the conditions precedent to the loan, for the procurement of goods and services, for the development of administrative and operation manuals, as well as providing technical guidance, when required, with the selection criteria, general implementation and inspection.

AID's local currency contribution to the project consists of $766,000 for the purchase of road materials for subprojects. It will be used to reimburse the MOPC for road materials on a pari passu basis at a rate to be determined by a project budget plan, with

D. Evaluation Plan

This project will be evaluated annually by DR and USAID during the implementation period, with a detailed assessment subsequent to full disbursement of funds. The Project Committee recommends that the first evaluation take place no later than three months after the first disbursement to assure early identification and solution of implementation problems The first evaluation will focus on the progress of procurement of goods and services, on the institutional capabilities of the newly created CV Unit and the RRCs, and, most important, on the implementation and proper accounting of conscription fees. Each subsequent evaluation will specifically review the subproject eligibility criteria, with a view to recommending changes or refinements on the basis of examination of the results of completed subprojects and on the RRCs', LRCs' and RPCs' experiences in subproject implementation.

Assessment of the impact on project goal --increasing incomes and productivity of small farmers-- will not be included in the annual evaluations. Many variables are involved in changes in income and productivity; improved roads is only one and abstracting their impact from that of other variables would be difficult and costly. Certain baseline data for the project area are available from the Small Farmer Survey and other sources such as cadastral maps showing farm size, and it may be possible to update that information after approximately three years of project activity (this should be ample time for the changes to occur that are expected to derive from the improved roads). Obtaining such data will require development of a new survey which would attempt to extract the impact of improved roads from that of other variables (e.g., fluctuations in market demand, introduction of improved seeds and other inputs, etc.), and questions must be raised as to whether such an undertaking would be feasible. The possibility, however, will be explored.

An important evaluation component of the project will be the loan-financed study planned to take place 18 months after the RRCs are staffed and operational. This study, to be undertaken by a qualified consulting firm, will analyze the entire institutional framework of Paraguay's road networks, both national and rural. The specific issue to be addressed concerns the MOPC institutional arrangements for building and maintaining rural roads:

- Should the responsibility for all roads be placed in a single organization (DR);

- Should the rural roads be built and maintained by the GDRC, and the national roads by DR; or

- Should a completely new institutional arrangement be established.

121

The recommendations of this study combined with the experience gained under the project will be used by the MOPC as the basis for drafting any changes to legislation governing the road system, and requesting GOP congressional and/or executive action to make those changes.

The Loan Committee assumes that the establishment of a single unit (DR) within the MOPC is the most efficient institutional arrangement, and the project has been designed to test that assumption.

ACTION: CDO
INFO:
DIR
ADIR
PO
CON
CHRON

ANNEX I

TELEGRAM

OFFICIAL FILE COPY

UNCLASSIFIED
Classification

STATE 14576
1/22/77

R 220145Z JAN 77
FM SECSTATE WASHDC
TO AMEMBASSY ASUNCION 4081
BT
UNCLAS STATE 014576

ACTION COPY
TO
DUE
TAKEN Asuncion 0352
Must be returned to C&R
with notation of action taken
INITIAL 1/26/77

1/27/77

RECEIVED
JAN 24 1977
U.S. AID MISSION
PARAGUAY
MAIL ROOM

AIDAC

E.O. 11652: N/A
SUBJECT: DAEC REVIEW - RURAL ROAD INTERIM REPORT

SUBJECT INTERIM REPORT WAS REVIEWED BY THE DAEC ON DECEMBER 16, AND INTENSIVE REVIEW WAS APPROVED SUBJECT TO THE GUIDANCE O;UTLINED BELOW:

1. PROJECT STRATEGY - APPROPRIATENESS OF PROJECT STRATEGY TO BUILD UP THE SMALL GDRC ORGANIZATION WITH THE EXPECTATION THAT IT WILL EVENTUALLY MERGE WITH THE DR INTO A SINGLE ORGANIZATION WAS QUESTIONED DURING REVIEW. INABILITY TO OBTAIN A MERGER AT TIME WHEN THE GDRC IS SMALL IMPLIES MERGER WOULD BE EVEN MORE DIFFICULT ONCE GDRC HAS BEEN STRENGTHENED. HOWEVER, GIVEN THAT MERGER OF THE TWO ORGANIZATIONS IN THE LONG RUN IS THE ONLY LOGICAL SOLUTION TO AN EFFECTIVE INSTITUTIONAL MECHANISM FOR RURAL ROADS IN PARAGUAY, PROJECT STRATEGY SHOULD BE SUCH THAT IT ENHANCES PROSPECT FOR MERGER. TOWARD THAT END, PROJECT DESIGN SHOULD LIMIT THE AUTHORITY OF GDRC TO THE SELECTION OF RURAL ROADS (THROUGH THE RURAL ROAD COMMITTEE (RPC) STRUCTURE) AND SHOULD ALSO FOCUS ON THE IMPROVEMENT OF THE GDRC'S ASSESSMENT AND COLLECTION PROCEDUFES UNDER THE FEE CONSCRIPTION SYSTEM, INCLUDING ACCOUNTABILITY OF FUNDS

COLLECTED. ONCE ROADS ARE SELECTED AND PRIORITIES SET BY THE GDRC, THE DR SHOULD BE ENTRUSTED WITH THE DESIGN, CONSTRUCTION, AND MAINTENANCE PLANNING AND SUPERVISION OF THESE ROADS. ALL PROJECT EQUIPMENT, WITH THE EXCEPTION OF SOME SUPPORT VEHICLES, SHOULD BE PLACED WITHIN THE DR WHERE EQUIPMENT SERVICE AND MAINTENANCE CAPABILITY ALREADY EXISTS. MEANS SHOULD BE PROVIDED TO ASSURE THIS EQUIPMENT IS USED ONLY FOR PROJECT PURPOSES AND NOT INCLUDED WITH REST OF DR EQUIPMENT. THE NEWLY ESTABLISHED RURAL ROAD COMMISSION WOULD OVERSEE THIS DIVISION OF LABOR AND COORDINATE INPUTS AS ENVISIONED IN THE INTERIM REPORT.

RECEIVED
JAN 24 1977
C.D.O.

2. INSTITUTIONAL ANALYSIS - THE INCREASED RESPONSIBILI-

UNCLASSIFIED
Classification

OPTIONAL FORM 161
(Formerly FS-419)
January 1975
Dept. of State

50151-101

TELEGRAM

TIES ANTICIPATED AT EACH LEVEL OF THE RURAL ROADS SYSTEM WILL REQUIRE INCREASED TECHNICAL CAPABILITY OF THE CORRESPONDING STAFF (PROFESSIONAL AND SKILLED LABOR). THE PP SHOULD INCLUDE INSTITUTIONAL ANALYSES OF BOTH THE GDRC AND DR (WITHIN THE FRAMEWORK OF THEIR RESPONSIBILITIES UNDER THE PROJECT STRATEGY) DETAILING THEIR CURRENT CAPABILITY AS WELL AS EXPECTED NEW REQUIREMENTS BASED ON THE ANTICIPATED MAGNITUDE AND TYPE OF WORKLOAD. THE DR ANALYSIS SHOULD ALSO FOCUS ON DEGREE TO WHICH ITS CAPABILITY WOULD NEED UPGRADING IN ORDER TO PROVIDE ADEQUATE SERVICE AND MAINTENANCE TO ITS CURRENT EQUIPMENT POOLS AS WELL AS ADDITIONAL EQUIPMENT TO BE PURCHASED UNDER THE LOAN FOR THE CONSTRUCTION AND MAINTENANCE OF RURAL ROADS. THE ANALYSES FOR BOTH ORGANIZATIONS SHOULD INCLUDE STAFFING REQUIREMENTS AND ELIGIBILITY CRITERIA FOR FILLING POSITIONS. IN ADDITION, FINAL PROJECT DESIGN SHOULD ADDRESS THE NEED FOR ADDING A TECHNICAL ASSISTANCE COMPONENT (NATURE OF TA REQUIRED, ETC.) TO UPGRADE CURRENTLY AVAILABLE SKILLS. ASSISTANCE FROM CONSULTING FIRMS/CONTRACTORS TO FILL GAPS SHOULD BE CONSIDERED. THE PP SHOULD ALSO DISCUSS POSSIBLE EFFECT OF JOINT PARAGUAY/BRAZIL HYDROELECTRIC PROJECT DRAWING TRAINED PERSONNEL AWAY FROM PROPOSED PROJECT.

3. ROADS COMMITTEE SYSTEM

-----A. INTENSIVE REVIEW SHOULD ELABORATE ON "GRASS ROOTS" ROADS COMMITTEE SYSTEM OUTLINED IN INTERIM REPORT. PARTICULAR ATTENTION SHOULD BE GIVEN TO THE RRC'S, WHICH ARE IDENTIFIED IN THE INTERIM REPORT AS THE KEY LINK IN THE RURAL ROADS SYSTEM AND ARE EXPECTED TO BE PRINCIPAL DECISION-MAKING BODIES IN RURAL AREAS. GIVEN IMPORTANCE OF RRC'S ROLE, FINAL PROJECT DESIGN SHOULD CONSIDER AN RRC MEMBERSHIP STRUCTURE WHICH INCLUDES REPRESENTATIVES OF GOP AND PRIVATE AGENCIES CONCERNED WITH RURAL SMALL FARMERS (E.G., MINISTRY OF AGRICULTURE, EXTENSION AGENTS, BANK OFFICIALS, ETC.).

-----B. WITH THE INCREASED RESPONSIBILITIES TO BE ASSIGNED TO THE SYSTEM, IT IS ALSO EXPECTED THAT FUNDING REQUIREMENTS WILL INCREASE. FOR EACH OF THE FIVE RRC'S IN THE PROJECT AREA, THE PP SHOULD INCLUDE A THOROUGH ANALYSIS OF THE ANTICIPATED MAGNITUDE OF THE INCREASED FUNDING REQUIREMENT, THE AVAILABILITY AND ADEQUACY OF FUNDS COLLECTED BY THE RRC'S TO MEET THE

TELEGRAM

INCREASED REQUIREMENT, AND THE ACCOUNTABILITY OF THE RRC'S FOR THE FUNDS COLLECTED.

4. ROAD CONSCRIPTION FEE - REGARDING COLLECTION OF FUNDS BY THE RRC'S, THE PP SHOULD PROVIDE ADDITIONAL INFORMATION ON HOW THE ROAD CONSCRIPTION SYSTEM WORKS AND WHERE IMPROVEMENTS MIGHT BE MADE. AN ANALYSIS OF THE RELIABILITY OF THE CONSCRIPTION SYSTEM -- GIVEN THE INCREASED FUNDING REQUIREMENTS DISCUSSED ABOVE -- SHOULD BE CONDUCTED WITH THE RESULTS PRESENTED IN THE PP.

5. SUB-PROJECT SELECTION CRITERIA - INTENSIVE REVIEW SHOULD IDENTIFY ECONOMIC AND SOCIAL CRITERIA WHICH WILL SERVE AS BASIS FOR APPROVING SUB-PROJECT PROPOSALS. THE PP SHOULD DETAIL THE MECHANISM CONTEMPLATED FOR APPROVING PROPOSALS AS THEY MOVE THROUGH EACH LEVEL OF THE RURAL ROAD SYSTEM AS WELL AS THE VARYING CRITERIA TO BE EVALUATED AT EACH LEVEL. IN THIS REGARD, ECONOMIC ANALYSIS OF PROPOSALS IS EXPECTED TO BE CONDUCTED BY TECHNICAL STAFF AT THE RRC LEVEL. INTENSIVE REVIEW SHOULD ADDRESS CONCERN REGARDING RELIABIRTY OF ECONOMIC ANALYSIS PERFORMED AT THIS LEVEL AS WELL AS THE AVAILABILITY OF QUALIFIED PERSONNEL TO CONDUCT THE REQUIRED ANALYSIS. IN ADDRESSING AVAILABILITY OF SUCH PERSONNEL, PP SHOULD ALSO IDENTIFY ORGANIZATION WITH WHOM THEY WILL BE AFFILITATED (I.E., MOPC, RRC, CONSULTANT, ETC.).

6. APPROPRIATE TECHNOLOGY MIX - INTERIM REPORT INDICATED PROJECTS WILL BE LABOR INTENSIVE TO THE DEGREE POSSIBLE. THE PP SHOULD INCLUDE SPECIFIC CRITERIA FOR DETERMINING THE APPROPRIATE MIX OF LABOR AND CAPITAL. USE OF CONSCRIPTED LABOR WILL HAVE SIGNIFICANT ROLE IN DETERMINING APPROPRIATE TECHNOLOGY MIX AND SHOULD BE INCLUDED IN DISCUSSION OF CRITERIA SELECTED.

7. RECURRING COSTS - PP SHOULD PROVIDE BUDGET ANALYSIS INDICATING GOP ABILITY AND WILLINGNESS TO FINANCE RECURRING COSTS (E.G., EQUIPMENT REPLACEMENT, MAINTENANCE, ETC.) LIKELY TO REMAIN ONCE AID INPUTS HAVE TERMINATED.

8. MISSION INVOLVEMENT - INTERIM REPORT OUTLINED MONITORING RESPONSIBILITIES WHICH WOULD DIRECTLY INVOLVE MISSION IN PROJECT ACTIVITIES. MISSION SHOULD LIMIT ITS ROLE TO MONITORING AND PLACE FULL IMPLEMENTATION RESPONSIBILITY ON GOP.

OPTIONAL FORM 151
(Formerly FS-418)
January 1975
Dept. of State

60151-101

125

TELEGRAM

9. OTHER DONOR COORDINATION - THE PP SHOULD INCLUDE DISCUSSION OF ROAD PROJECTS CONTEMPLATED BY OTHER DONORS (IBRD, IDB, ETC.), THE POTENTIAL IMPACT ON THE PROPOSED PROJECT, AND THE EFFORTS BEING MADE TO COORDINATE PROJECTS TO ASSURE COMPLEMENTARITY AND AVOID DUPLICATION.

10. TDY - AID/W TDY TEAM CONSISTING OF HASAN, STEVENS, SEVERN AND BRAIDA EXPECTED TO ARRIVE PARAGUAY IN LATE FEBRUARY-EARLY MARCH TO ASSIST PROJECT DEVELOPMENT. PRIOR TO TEAM'S ARRIVAL MISSION SHOULD CONDUCT STUDIES ON MECHANICS OF CONSCRIPTION FEE SYSTEM AND THE INSTITUTIONAL STRUCTURE OF BOTH THE DR AND GDRC. SER/ENGR RECOMMENDS SERVICES DAN SIGLIN, HEAVY EQUIPMENT SPECIALIST WITH 30 YEARS EXPERIENCE IN HIS FIELD, TO UNDERTAKE DR EQUIPMENT ANALYSIS. SIGLIN HAS WORKING KNOWLEDGE OF SPANISH AND IS AVAILABLE FIRST WEEK OF FEBRUARY TO CONDUCT ANALYSIS PRIOR TO TDY TEAM ARRIVAL. PLEASE CABLE SCOPE OF WORK AND FUNDING CITATION SO THAT SER/ENGR MAY PREPARE PIO/T SIGLIN SERVICES. SPECIFIC DATA REQUIREMENTS OF ECONOMISTS ON TDY TEAM WILL BE SUBJECT SEPTEL.

11. BORROWER AND IMPLEMENTING AGENT - IN PP, BORROWER UNDER THE PROJECT SHOULD BE THE GOP AND MOPC THE IMPLEMENTING AGENT.

HABIB

50161-101

OPTIONAL FORM 161
(Formerly FS-412)
January 1975
Dept. of State

ANNEX III
Exhibit 1

January 2, 1978

MISSION DIRECTOR'S CERTIFICATION

PARAGUAY: Rural Roads Project

I certify that the Government of Paraguay has the capability required to implement the proposed loan, maintain and utilize the referenced project, taking into account the following factors:

A. All projects previously financed by the U.S. Government either have been, or are being, implemented, used and maintained.

B. This project will provide substantial technical assistance and training directed at strengthening the organizations which are responsible for the secondary road system.

C. Government recognizes the value of improving secondary roads and is budgeting funds for this purpose.

Abe M. Peña
Director
USAID/Paraguay

Statutory Criteria Checklist

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?	1. Contemplated assistance will directly benefit the needy. Subproject selectic criteria have been designed to assure that only subprojects with such benefit will be selected for financing under the Project.
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?	2. No such determination has been made. Paraguay has an active drug control program, assisted by the DEA.
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?	3. No.
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?	4. The Secretary of State has so determined.
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?	5. No such case is known.
6. FAA Sec. 620(e) (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?	6. No such action is known to have occurred.

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?	7. Paraguay is not a Communist country. Assistance will not be provided to the countries listed.
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?	8. (a) No. (b) None is known.
9. FAA Sec. 620(j). Has the country permitted, or failed to take adequate measures to prevent, the damage or destruction, by mob action, of U.S. property?	9. No.
10. FAA Sec. 620(l). 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?	10. Paraguay has instituted such program.
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, a. has any deduction required by Fishermen's Protective Act been made? b. has complete denial of assistance been considered by AID Administrator?	11. Paraguay has not seized or imposed any penalty or sanction against any U.S. fishing activities.
12. FAA Sec. 620(q); 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?	12. (a) Paraguay is not in default as defined in the FAA on any AID loan. It has consistently been one to five months slow in making interest and principal payments. (b) No.
13. FAA Sec. 620(s). What percentage of country 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 Coordinators and Military Assistance Staff (PPC/RC).)	13. In 1977, 17.5% of the national budget was for military expenditures. In recent years no more than $2 million a year in foreign exchange has been used to purchase military equipment, none for sophisticated weapons systems.

A

14. FAA Sec. 620(t). 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?

14. Paraguay has full diplomatic relations with the United States.

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?

15. Except for payments to the ILO, Paraguay is sufficiently up to date in its payments to the U.N. so that it has incurred no sanctions against it.

16. FAA Sec. 620A. Has the country granted sanctuary from prosecution to any individual or group which has committed an act of international terrorism?

16. No such instance is known.

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?

17. 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.?

18. No. Paraguay has not delivered or received nuclear reprocessing or enrichment equipment, matierals, or technology.

19. FAA Sec. 901. Has the country denied its citizens the right or opportunity to emigrate?

19. No. Paraguayans are free to emigrate

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.

1.a. Yes. See FY 1979 Annual Budget Submission for USAID/Paraguay.

b. FAA Sec. 201(b)(5), (7) & (8); Sec. 208; 211(a)(4), (7). Describe extent to which country is:

(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.

b. (1) Paraguay has active colonization agricultural extension, and small farm credit programs all designed to increase food production. It has an international credit for building food storage facilities and encourages cooperative efforts in marketing.

(2) Laws 550 and 349 create a favorable climate for private enterprise and investment. Foreigners may invest in Paraguay on equal terms with Paraguayans and the Ministry of Industry and Commerce actively promotes foreign inv

(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. FAA Sec. 201(b), 211(a). Is the country among the 20 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. FAA 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. FAA Sec. 502B. 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. FAA Sec. 531. Is the Assistance to be furnished to a friendly country, organization, or body eligible to receive assistance?

c. FAA Sec. 609. 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 supports and encourages cooperative activities. The Municipal Development Institute also involves local citizenry in development planning.

(4) (a) Some 48.2% of the 1977 national budget is clearly earmarked for developmental and social expenditures (education, health, agriculture, transport and communications, and industry). A substantial part of other categories is for development (e.g., IDM's financing is from the Ministry of the Interior, vocational training is under the Ministry of Justice and Labor) and social services (e.g., the Social Security System).

(b) Diversion of such resources for unnecessary military expenditure and intervention is not believed to have taken place.

(5) The government has an active cadastral and property tax improvement project. Its colonization program has opened up substantial lands to small farmers. Paraguay has basically a free press and allows freedom of expression within clearly defined limits. Its judiciary functions according to law. Private enterprise and initiative are encouraged, and people, with certain exceptions, have basic freedoms. The situation has been essentially stable for some years.

(6) Paraguay has an elected government (executive and legislature) and has formal and informal channels through which the citizenry can express concerns. The government encourages cooperatives and variety of local self-help committees.

c. Yes, for b

d. No.

2. Not applicable

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 subcategory 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%)?

   1. (a) and (b). This project was part of the Congressional Presentation.

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?

   2. (a) Yes. (b) Yes

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?

   3. The only legislative action necessary is ratification by the Paraguayan Congress of the Loan Agreement. This is expected to be done in a timely fashion, based on past USAID experience.

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)?

   4. 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?

   5. Mission Director has so certified.

A.

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

6. Project is not susceptible of execution as part of a regional or multilateral project. It is not expected that this project will encourage regional development programs since it is designed to promote the development of an area wholly within Paraguay.

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.

7. The loan should affect all of the items with the exception of (f).

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).

8. Procurement of goods and services will be provided under the loan by U.S. individuals or firms and will also be open to Code 941 individuals and firms.

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.

9. Paraguay is contributing approximately $3.0 million in local currency to 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?

10. No.

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?

1.a. (a) This loan will directly strengthen the participation of the rural poor in Paraguay's development by enhancing their capability to contribute to the national economy by expanding their labor-intensive agricultural production, up to now restrained due mainly to poor access to the market. It is also expected that investment will spread out from cities to small towns and rural areas. (b) Priority attention will be directed at small farmers thus enabling and encouraging greater numbers of rural poor to help themselves. This loan will assure maximum participation in the task of economic development on the part of the people of the country, through the encouragement of democratic, private and local governmental institutions such as community level supervision and maintenance committees.

B1	b. FAA Sec. 103, 103A, 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.]	b. Assistance is being made availal
	(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;	(1) (103) for rural development. The project is designed to carry out construction, upgrading, and maintaining rural roads in those areas where they will contribute to the development goal of increasing the income and productivity of the Paraguayan small farmer.
	(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;	N/A
	(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;	N/A
	(4) [106] for technical assistance, energy, research, reconstruction, and selected development problems; if so, extent activity is:	N/A
	(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 manmade disaster;	
	(e) for special development problem, and to enable proper utilization of earlier U.S. infrastructure, etc., assistance;	
	(f) for programs of urban development, especially small labor-intensive enterprises, marketing systems, and financial or other institutions to help urban poor participate in economic and social development	

81

(5) [107] by grants for coordinated private effort to develop and disseminate intermediate technologies appropriate for developing countries.	N/A
c. FAA Sec. 110(a); Sec. 203(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)?	c. Yes, Paraguay will contribute approximately $3.0 million to the project. The GOP's loan request provides assurances that it will provide at least 25% of the costs of the project for which the loan is to be made (see Project Financial Analysis Section of PP).
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?	d. No.
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.	e. This loan will contribute directly to the objectives reflected in items (1), (2), (3) and (5). This project will work through local road committees whose members use the roads and whose members will contribute cash, labor and materials for improving their roads.
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.	f. The Program directly contributes to all three of these areas by training members of rural small farmer communities so they can become more effective participants in governmental and political processes.

B1

g. FAA Sec. 201(b)(2)-(4) and -(8); Sec. 201(e); Sec. 211(a)(1)-(3) and -(8). Does the activity give reasonable promise of contributing to the development: of economic resources, or to the increase of productive capacities and self-sustaining economic growth; 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?

g. The project gives reasonable promise of contributing to the increase of small farmer productive capacities and self-sustaining economic development in rural areas of Paraguay by providing access roads linking small farmers with rural markets in the project area. It is related to a number of development activities sponsored by the GOP, AID and other lenders. A discussion of these items is given in the PP, which provides information and conclusion on the project's economic and technical 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.

h. Certain goods and services are expected to be procured from the United States. The project's effect on the U.S. balance of payments will be de minimis.

2. Development Assistance Project Criteria (Loans only)

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

2.a. The project has been discussed with other donors and no financing is available. The project is not of the type to be attractive for private financing.

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

b. (1) Experience with other loans and future economic prospects for Paraguay indicate satisfactory capacity for loan repayment. (2) Loan and its terms are reasonable and legal under U.S. and Paraguayan laws.

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 to indicate that funds will be used in an economically and technically sound manner?

c. Such application has been received.

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

d. Yes, PP does so describe.

137

e. FAA Sec. 202(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?

e. $3,930,000 will be used for importing equipment from private sources. $750,000 will be used to purchase materials locally from private sources. $500,000 will be used for technical assistance expected to be procured 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?

f. Assistance is not for any productive enterprise which will compete in the U.S. with U.S. enterprise.

Project Criteria Solely for Security Supporting Assistance

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

3. Not applicable.

Additional Criteria for Alliance for Progress

[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?

4. a. Project supports principles of the Act of Bogota by having as its primary objective the improvement of rural living through construction, upgrading and maintenance of rural roads to be used by the small farmer. It supports the principles of the Charter of Punta del Este by supporting a rapid and equitable economic development in rural areas. Project is one of several similar activities throughout Latin America.

b. FAA Sec. 251(b)(8); 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?

b. Paraguay has made no attempt to repatriate capital invested in other countries by its citizens since it has had no problem of foreign exchange or flight capital. The loan is consistent with CEPCIES recommendations.

6C(3) - STANDARD ITEM CHECKLIST

Listed below are statutory items which normally will be covered routinely in those provisions of an assistance agreement dealing with its implementation, or covered in the agreement by exclusion (as where certain uses of funds are permitted, but other uses not).

These items are arranged under the general headings of (A) Procurement, (B) Construction, and (C) Other Restrictions.

A. Procurement

1. FAA Sec. 602. Are there arrangements to permit U.S. small business to participate equitably in the furnishing of goods and services financed?	A.1. Procurement of goods and services will be advertised to U.S. small business according to AID procurement regulations.
2. FAA Sec. 604(a). Will all commodity procurement financed be from the U.S. except as otherwise determined by the President or under delegation from him?	2. Yes. Such delegation currently allow for procurement from Code 941 countries.
3. FAA Sec. 604(d). If the cooperating country discriminates against U.S. marine insurance companies, will agreement require that marine insurance be placed in the U.S. on commodities financed?	3. No such instance of discrimination is known to have occurred.
4. FAA Sec. 604(e). If offshore procurement of agricultural commodity or product is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity?	4. No such procurement is contemplated
5. FAA Sec. 608(a). Will U.S. Government excess personal property be utilized wherever practicable in lieu of the procurement of new items?	5. Yes.
6. MMA Sec. 901(b). (a) Compliance with requirement that at least 50 per centum of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed shall be transported on privately owned U.S.-flag commercial vessels to the extent that such vessels are available at fair and reasonable rates.	6. USAID will monitor such compliance when applicable. The Loan Agreement will provide for such requirement.
7. FAA Sec. 621. If technical assistance is financed, will such assistance be furnished to the fullest extent practicable as goods and professional and other services from private enterprise on a contract basis? If the facilities of	7. Any technical assistance to be financed is expected to be furnished in the way so stated.

are they particularly suitable, not competitive with private enterprise, and made available without undue interference with domestic programs?

8. International Air Transport. Fair Competitive Practices Act, 1974

If air transportation of persons or property is financed on grant basis, wi provision be made that U.S.-flag carrie will be utilized to the extent such service is available?

8. Yes.

B. Construction

1. FAA Sec. 601(d). If a capital (e.g., construction) project, are engineering and professional services of U.S. firms and their affiliates to be used to the maximum extent consistent with the national interest?

B. 1. Yes.

2. FAA Sec. 611(c). If contracts for construction are to be financed, will they be let on a competitive basis to maximum extent practicable?

2. Yes.

3. FAA Sec. 620(k). If for construction of productive enterprise, will aggregat value of assistance to be furnished by the U.S. not exceed $100 million?

3. Not applicable.

Other Restrictions

1. FAA Sec. 201(d). If development loan, is interest rate at least 2% per annum during grace period and at least 3% per annum thereafter?

C. 1. Yes. Interest rates will be as stated and the length of loan will be only 20 years.

2. FAA Sec. 301(d). If fund is establishe solely by U.S. contributions and adminis tered by an international organization, does Comptroller General have audit rights?

2. Not applicable.

3. FAA Sec. 620(h). Do arrangements preclude promoting or assisting the foreign aid projects or activities of Communist-Bloc countries, contrary to the best interests of the U.S.?

3. Yes.

4. FAA Sec. 636(i). Is financing not permitted to be used, without waiver, for purchase, long-term lease, or exchange of motor vehicle manufactured outside the U.S. or guaranty of such transaction

4. Motor vehicles to be procured will be of U.S. manufacture.

5. Will arrangements preclude use of financing:

a. FAA Sec. 114. to pay for performance of abortions or to motivate or coerce persons to practice abortions?

b. FAA Sec. 620(g). to compensate owners for expropriated nationalized property?

c. FAA Sec. 660. to finance police training or other law enforcement assistance, except for narcotics programs?

d. FAA Sec. 662. for CIA activities?

e. App. Sec. 103. to pay pensions, etc., for military personnel?

f. App. Sec. 106. to pay U.N. assessments?

g. App. Sec. 107. to carry out provisions of FAA Sections 209(d) and 251(h)? (transfer to multilateral organization for lending).

h. App. Sec. 501. to be used for publicity or propaganda purposes within U.S. not authorized by Congress?

5. Yes. None of the items listed will be financed.

ANNEX I
Exhibit 3

LOAN APPLICATION

898390

MINISTERIO DE OBRAS PÚBLICAS
Y
COMUNICACIONES
S.Nº 465

U.S. AID
PARAGUAY

31 de diciembre de 1977

DISTRIBUTION		
OFFICE	ACTION	INFO
DIR		✓
ASST. DIR		✓
PO		✓
CONT		✓
CDO	X	
REG. E.		
RDO		✓
ECON DO		
TRDN		
POP		
AFLO		
JAO/ADM		
GSO		
EMB/C&R		
C&R		✓
FINAN		✓

Señor
Abe M. Peña, Director
Misión Económica de los Estados Unidos
de América en el Paraguay
Ciudad

De nuestra mayor consideración:

Nos dirigimos a usted para expresarle nuestro reconocimiento por los auspiciosos resultados de las conversaciones mantenidas por funcionarios a su digno cargo, con relación a un Proyecto de Préstamo para construcción, mejoramiento y mantenimiento de caminos vecinales en los departamentos de Caaguazú, Guairá, Cordillera y Paraguarí.

El Gobierno del Paraguay tiene sumo interés en ayudar al pequeño agricultor para hacerles partícipes de los beneficios sociales a que se acogen los grupos con ingresos más elevados. Este objetivo estará más cerca de ser una realidad si pudiéramos contar con una red de caminos vecinales que permitan el acceso permanente de los agricultores a los centros urbanos de comercialización.

El interés del Gobierno del Paraguay en desarrollar este Proyecto denominado "Caminos Vecinales" se fundamenta además en el hecho de que la agricultura constituye uno de los sectores productivos más importantes del país, dentro de la estructura económica nacional, siendo su participación en el PIB de aproximadamente 20%. Asímismo, es el sector productivo en el que participa en mayor número la población del país, pudiendo mejorar esta participación concomitantemente con el aumento del ingreso económico de la población agrícola.

En atención a lo expuesto, solicitamos, en nombre del Gobierno Nacional que la Misión Económica de los Estados Unidos (USAID), considere la concesión de un préstamo de U.S.5.180.000 dólares americanos en términos "blandos" de

..//..

143

financiamiento, para la ejecución del Programa de Trabajo establecido dentro del Proyecto "Caminos Vecinales", comprometiéndose el Gobierno del Paraguay a aportar recursos por el valor total de U$S.2.425.000 dólares americanos como contrapartida local, quedando la financiación del Proyecto distribuída de la siguiente manera:

		% del Proyecto
USAID	U$S.5.180.000	62
Fondos del Gobierno	U$S.2.425.000	29
Fondos de las Comunidades	U$S. 715.000	9
Total	U$S.8.320.000	100

La contrapartida del Gobierno será destinada principalmente a los siguientes fines:

a) Crear una unidad de trabajo permanente que operará al mismo nivel que los departamentos de la D.G.V. con 13 puestos distribuídos en varias secciones, garantizando de esta manera una eficiente administración del Proyecto y su continuidad en el futuro;

b) Organizar las oficinas de las Juntas Viales Regionales creando 4 puestos en cada una de ellas para que cumplan con sus funciones técnicas y administrativas;

c) Proveer 5.000 metros de alcantarillas para el sistema de drenaje superficial en la construcción de los caminos;

d) Cubrir todos los gastos de operación de los equipos asignados al Proyecto como combustible (75%), lubricantes (100%), salarios de operadores, ayudantes y choferes, mantenimiento de los equipos;

e) Además para garantizar la buena marcha del Proyecto, el Gobierno cubrirá cualquier deficiencia en el aporte de las comunidades según se detalla.

La contrapartida de las comunidades consistirá de lo siguiente:

a) mano de obra para auxiliar en el mejoramiento y mantenimiento de los caminos, evaluada en aproximadamente U$S.415.000.

b) materiales para puentes que serán entregados principalmente en forma de madera para la construcción de los mismos y eventualmente otros materiales como piedra y arena, evaluadas en aproximadamente U$S.150.000.-

MINISTERIO DE OBRAS PÚBLICAS
Y
COMUNICACIONES

c) ingresos provenientes del cobro de la tasa de conscripción vial y donaciones locales en un total de U$S.150.000, para sufragar 25% de los gastos del combustible.

El plan de trabajo tiene previsto la construcción y mejoramiento de un mínimo de 1.400 km. de caminos vecinales en un período de cuatro años.

Considerando que el mantenimiento futuro de estos caminos vecinales es esencial para que la inversión inicial sea justificada, en el Convenio de Préstamo podrá preverse que el Gobierno del Paraguay deberá incluir anualmente en el Presupuesto Nacional, fondos suficientes para cubrir los gastos de mantenimiento de los caminos vecinales construídos y mejorados, siempre que los ingresos correspondientes a la tasa de conscripción vial y la colaboración de las comunidades no sean suficientes para este fin.

Al dejar así expuesto el criterio con respecto al proyecto de referencia, aprovechamos la ocasión para saludarle con las seguridades de nuestra más distinguida consideración.

Gral.D.I.M.César Barrientos
Ministro de Hacienda

Gral.de Div.Juan A.Cáceres
Ministro de Obras Públicas
y Comunicaciones

MINISTERIO DE OBRAS PUBLICAS Y COMUNICACIONES

cgn.

145

146

DRAFT
LOAN AUTHORIZATION

Provided from: Development Assistance Funds ("Food and Nutrition")

PARAGUAY Rural Roads

Loan Amount: $5,200,000

Pursuant to the authority vested in the Deputy U.S. Coordinator, Alliance for Progress, by the Foreign Assistance Act of 1961, as amended, and the delegations of authority issued thereunder, I hereby authorize the establishment of a loan ("Loan"), pursuant to Section 103 of said Act and in furtherance of the Alliance for Progress, to the Government of Paraguay ("Borrower") of an amount not to exceed five million two hundred thousand United States Dollars ($5,200,000) to assist the Borrower in financing the (United States Dollar and local currency) costs of a Rural Roads Project that will benefit Paraguayan small farmers in selected geographic areas in the eastern region of the country. The Loan shall be subject to the following terms and conditions:

1. Interest and Terms of Repayment

Borrower shall repay the Loan to A.I.D. in United States Dollars within twenty (20) years from the date of the first disbursement under the Loan, including a grace period of not to exceed ten (10) years. Borrower shall pay to A.I.D. in United States dollars interest at the rate of two percent (2%) per annum during the grace period and three percent (3%) per annum thereafter on the outstanding disbursed balance of the Loan, and on due and unpaid interest.

2. Other Terms and Conditions

(a) Goods, services (except for ocean shipping) and marine insurance financed under the Loan shall have their source and origin in Paraguay, or in countries included in Code 941 of the A.I.D. Geographic Code Book. Marine insurance may be financed under the Loan only (i) if it is obtained on a competitive basis, and (ii) if any claims thereunder are payable in freely convertible currencies. Ocean shipping financed under the loan shall be procured in any country included in A.I.D. Geographic Code 941.

(b) United States dollars utilized under the Loan to finance local currency costs shall be made available pursuant to conditions and procedures satisfactory to A.I.D.

(c) Prior to first disbursement or the issuance of any commitment documents under the Loan, the Borrower shall submit to A.I.D., in form and

substance satisfactory to A.I.D.

(i) Legal evidence of the establishment of a rural roads unit (Caminos Vecinales, or "CV"), within the MOPC, which will have full responsibility for implementing the project. Such evidence should include an official ministerial decree creating CV, and the staffing pattern for CV,

(ii) Evidence of the appointment of a director for CV who has been approved by A.I.D.

(iii) A financial plan for the Project, approved by A.I.D., outlining the GOP's and A.I.D.'s contribution by year during the life of the Project;

(iv) The opinion of the Attorney General of Paraguay or other counsel acceptable to A.I.D. that the agreement has been duly authorized and/or satisfied by and executed, and that it constitutes a valid and legally binding obligation of the Republic of Paraguay, in accordance with all of its terms;

(v) Evidence that a training specialist, approved by A.I.D., has been appointed to work in CV;

(vi) Evidence that directors, approved by A.I.D., have been appointed to head the four Regional Road Committees (RRC's);

(vii) Evidence that CV has access to procurement services adequate to make the purchases proposed for the project and has access to a person with sufficient experience in procurement to act as liaison between CV and the unit providing the procurement services.

(d) Prior to first disbursement under the Loan for construction materials the Borrower shall submit to A.I.D., in form and substance, satisfactory to A.I.D.:

(i) An Operations Manual, including the selection criteria by which individual subprojects will be screened and prioritized, approved by A.I.D., has been distributed to the RRC's and LRC's, and is being utilized;

(ii) An Administration Manual, approved by A.I.D., for the operation of CV and the RRC's, has been distributed and is being utilized;

(iii) That an equipment and vehicle maintenance schedule has been developed and is being utilized;

(iv) That a supply specialist, approved by A.I.D., has been contracted and a spare parts system is being, or has been put into use;

(v) That CV and theRRC's have been staffed and are fully operational.

(e) Prior to any loan disbursement, or issuance of any commitment documents under the loan in any Project year, Borrower shall, except as A.I.D.

may otherwise agree in writing, provide evidence satisfactory to A.I.D. that:

(i) there has been included in the national budget an amount for the Project no less than that provided for in the Project Budget Plan as Borrower's contribution for the Project year;

(ii) all funds for the Project so budgeted for prior years have been released for use by CV;

(iii) CV and the four RRC's referred to in Section 2.(d) above are operating satisfactorily in accordance with the system described in the Project Paper.

3. Covenants

Except as A.I.D. may otherwise agree in writing, the Borrower shall covenant:

(a) That the GOP will finance any shortfall in the community contribution needed to improve roads under the Project or to maintain them once they have been improved;

(b) That the budget for the operating costs of the CV and the four RRC's will be a separate line item in the MOPC general budget;

(c) That the GOP will provide funds necessary to fund the operations of a permanent organization to improve and maintain rural roads in the four departments of the Project: Caaguazu, Cordillera, Guaira and Paraguari;

(d) That MOPC will utilize the equipment obtained with loan funds only for purposes of the Project and after the Project is completed the equipment will be used only to improve and maintain rural roads in the four departments of the Project; and

(e) Such other terms and conditions as A.I.D. may deem advisable.

149

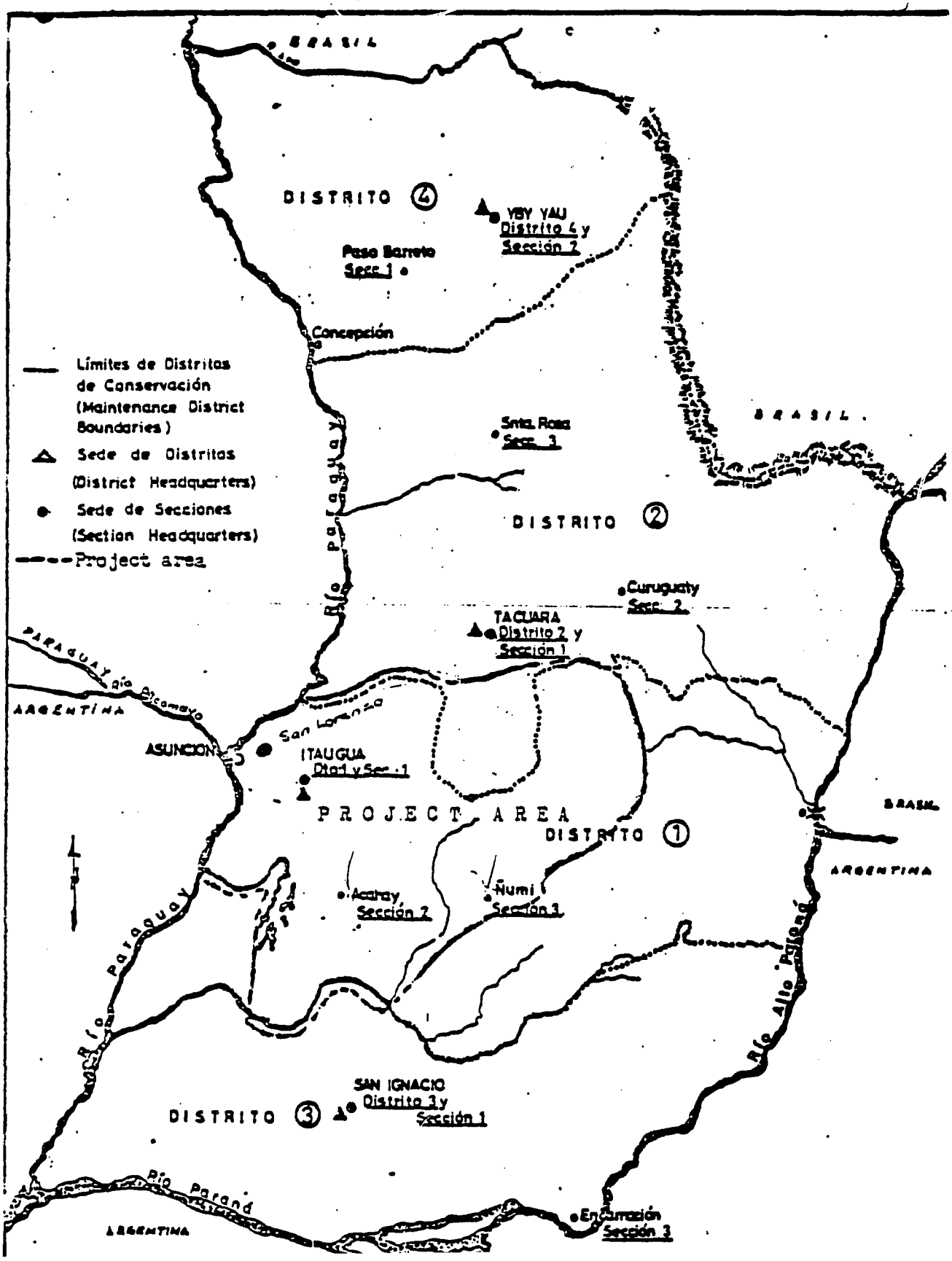
150

TABLE

ANNEX IV Exhibit 1

REGION ORIENTAL (Eastern Paraguay)

Ubicación de Sede de Distritos y Secciones (Location of District and Section Headquarters



TECHNICAL STANDARDS FOR RURAL ROADS

1. The topography of the project area basically falls into 2 categories only i.e., flat and rolling terrain.

2. Speed, Horizontal Curves, Stopping Sight Distance:

	Flat	Rolling
Design Speed	65 Km/h	50 Km/h
Radii, Horizontal Curves (Transition curves will not be used)	143m (8°)	76 m (15°)
Minimum Stopping Sight Distances	90m	63 m

3. Maximum and Minimum Grades:

	Length of grade	Maximum % grade
Flat terrain	more than 300	4
	299 m to 200 m	5
	199 m and less	7
Rolling terrain	more than 300 m	4.5
	299 m to 250 m	5.0
	245 m to 200 m	5.5
	199 m to 150 m	6.5
	149 m to 100 m	8.0
	99 m or less	9.0

In cut sections the minimum grade will be one percent (1 %) except at the crest of vertical curves.

4. Vertical Curves

Vertical curves need not be used when the algebraic difference in grades is less than 0.5%. When vertical curves are used they must provide these minimum sight distances.

Flat terrain	137 m
Rolling terrain	103 m

5. Controlling Elements in the Design of the Road Cross Section:

a. Right of way; 20 m minimum

b. Width of road bed, shoulder to shoulder; 6 m.

c. Widening on curves;

Radius in meters	Widening in meters
50	1.6
100	0.9
200	0.5
600	0.3
1000	0.25
over 1000	0.2

- For curves of intermediate radii, use a straight line interpelation to obtain widening.
- The widening shall begin to develop 30 meters before the start of the curve and taper back to normal width at 30 meters following the curve.

d. Superelevation (SE) on Curves

Radius in meters	% slope of SE
- less than 200 m	8.0 (maximum)
- more than 440 m	2.0 (minimum)

- For curves of intermediate raddi, decrease or increase the SE 0.5% for every 20 meter decrease or increase in radius respectively.

e. Slopes of Sides for Embankments and in Cuts:

- Embankment side slopes - 3:2
- Back Slopes in Cuts -

- in rock	Vertical
- in very firm ground	1:1
- in common firm ground	1.5:1
- in soft ground	2:1

f. Ditches:

1. Normal roadside ditches will be trapizoidal in shape to facilitate shaping with the blade of the grader. The standard width will be

50 cm and normal flow line depth below the shoulder point will be 50 cm. The back slopes will conform to the above standards for slopes.

2. When an embankment is more than 2 meters high for more than 20 meters of length the base of the embankment will be widened 2 meters on either side of the base to form a safety bench between the embankment and the side ditch.

3. Within towns or villages, the ditches will be shaped to conform to the typical ditch section in use in the particular zone.

g. Slopes of Drainage Ditches

Where road grades are in excess of 2%, or in any case where grades of invert of drainage ditches are such that the velocity of flow in the ditch exceeds two feet per second (2 ft/sec. or 60 cm/sec.), measures such as rip-rapping or sodding shall be employed to prevent scouring and erosion. Where invert slopes are in excess of 5%, the invert of the drainage ditch shall be stepped with rip-rapped drops so that the slope does not exceed 2% on any run of the ditch, except at rip-rapped drop steps. In no case shall ditches be graded or constructed in such a manner as to allow pooling to take place.

ESTIMATE OF PROJECT CONSTRUCTION COSTS

1. General: It is calculated that a total of 1400 to 1500 Km of rural roads will be constructed during the 3 year construction life of the AID loan. Two different and independent approaches are developed here to arrive at average construction costs per kilometer. The first utilizes prevailing bidding prices for unit construction work in Paraguay. The second, an operational approach, utilizes equipment depreciation, labor, fuel and operating costs, materials, and overhead. Both methods use figures adjusted for projected inflation plus contingencies.

2. The Unit Price Approach: Thirty five sections of rural roads, trucks and trails, totaling 366 Km have been inventoried. Estimated quantities and unit of work construction costs have been developed and average $ 3890 per Km. However, reviewing these for potential subprojects it is apparent that three sections (Nos. 8, 9, and 20) have little or no chance of being considered as candidates for improvement within the project. The remaining 32 sections total 296.9 Km with construction a cost estimate of $4144 per kilometer. For 1400 Km the total construction cost will be $5,802,000 on this basis.

Unit Prices & Example Roads

			No. 1, 33 Km.		No.2, 11.2 Km.		No.3, Composite 29 Km.	
Construction Item	Unit	$/Unit	Quantity	$	Quantity	$	Quantity	$
Clearing brush, trees & stumps								
- light	Ha.	288	8.0	2304	-	-	7.5	2160
- medium	Ha.	384	6.0	2304	0.6	288	6.3	2400
- heavy	Ha.	480	6.0	2880	-	-	-	-
Culverts w/headwalls								
- 60 cm ϕ	L.M.	58.50	108	6318	9	527	261	15269
- 80 cm ϕ	L.M.	86.-	30	2580	-	-	120	10320
-100 cm ϕ	L.M.	110.-	528	58080	-	-	99	10890
-cleaning	Each	20.-		-	10	200	-	-

151

Special ditches	m^3	0.70	-	-	3750	2625	3030	2121
Rock ripping	m^3	5.00	9420	47100	-	-	-	-
Bridges								
- less than 10 m	L.M.	800	34	27200	-	-	54	43200
- more than 10 m	L.M.	900	35	31500	-	-	-	-
- repairing	L.S.	each	1	3500	-	-	-	-
Road grading								
- simple	Km.	224	39	7392	10.0	2240	17.5	3920
- medium	Km.	320	-	-	-	-	6.3	2000
- complex	Km.	400	-	-	-	-	-	-
Raising grade (Embankments)								
- short hauls	m^3	1.15	-	-	-	-	16870	19400
- hauls about 3 Km	m^3	1.98	13020	25780	1500	2957	300	594
- hauls over 3 Km	m^3	2.25	16550	37238	-	-	9120	20540
Totals			-	254283	-	8837	-	132814
Cost per Km.				7706 1/		789		4580

No. 1, Paraguarí Province; Chololó to Valenzuela (1/ The last 8 km average $8676/Km.)

No. 2, Paraguarí Province; Ybytymí thru Bamboo Swamp.

No. 3, Caaguazú Province; From north of Col. Oviedo to La pastora. divided into 4 separate segments.

3. The Operational Approach: Depreciation of equipment, the major cost item, is based on an assumed 50% salvable value at the completion of the 3 year project implementation. This and other factors are itimezed here.

a. AID Loan

- Equipment, original value of $3,931,000 depreciated 50%	$ 1,965,000
- Technical assistance	269,000
- Imported and local materials	800,000
AID loan sub-total	$ 3,034,000

b. GOP/MOPC Contribution

- Fuel costs, not including 20% to be contributed by communities, $629,000 for all equipment at 80%	503,000

- Equipment operator's wages	380,000
- Equipment maintenance (not including spare parts) 5% of total equipment cost	180,000
- Drivers and other directly related support labor	340,000
Sub-total	1,403,000
- MOPC support and overhead, 10%	140,000
GOP/MOPC sub-total	$1,543,000

c. Community Contributions

- Volunteer labor, average of 12 persons working with each of 8 construction units at all times; 12 x 8 x 250 days/year = 72,000 laborer-days at $3.	216,000
- Cash contribution for 20% of fuel	126,000
- Construction materials, farm tractor contribution or rental, etc., equal to above 2 items	342,000
Communities sub-total	$ 684,000

d. Summary

- A.I.D. loan	3,034,000
- GOP/MOPC funds	1,543,000
- Communities	684,000
- For 1400 Km the average is $3758/Km	5,261,000

4. Comparing the two Approaches

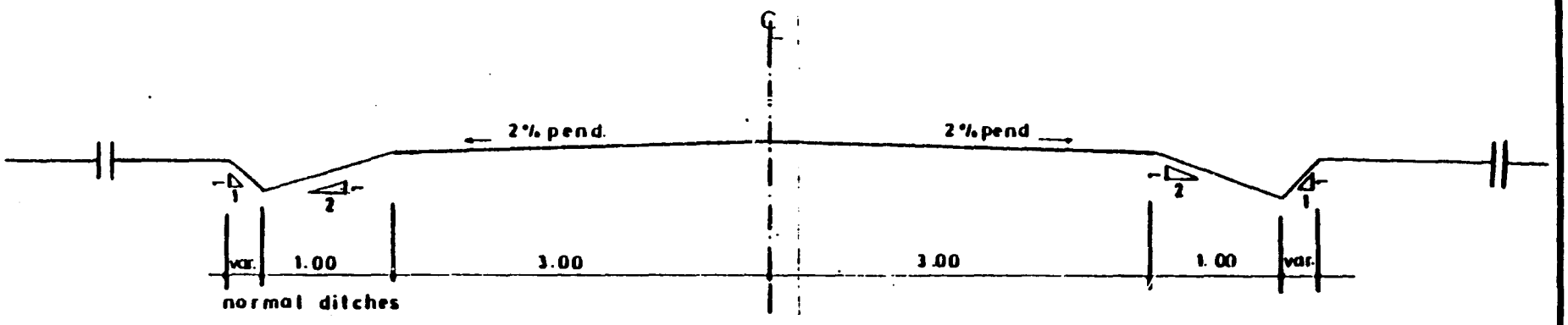
- By Unit Price	$4144/Km
- By Operation Costs	3758/Km
- Difference	386/Km

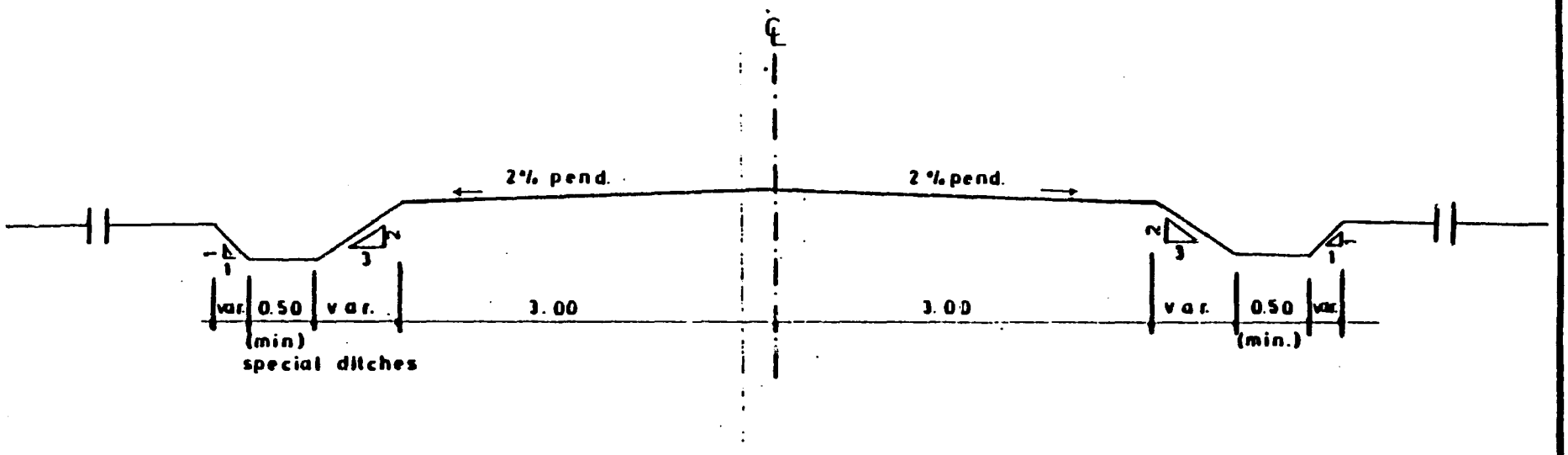
This difference of approximately 10% between estimated construction costs is within the limitations of reliability based on the nature of the preliminary data.

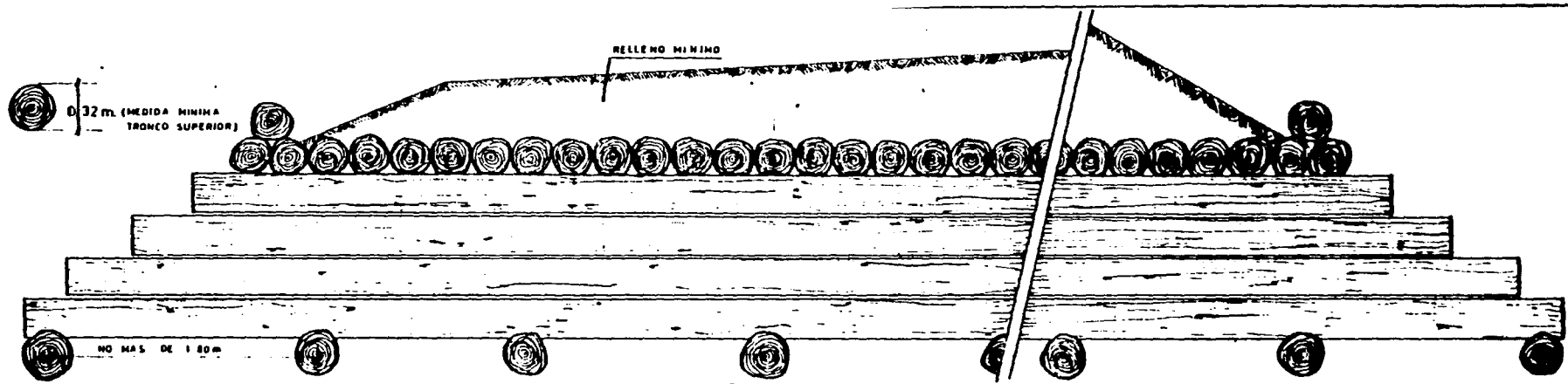
160

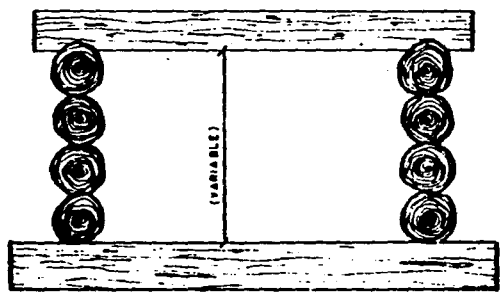
TYPICAL ROAD SECTION

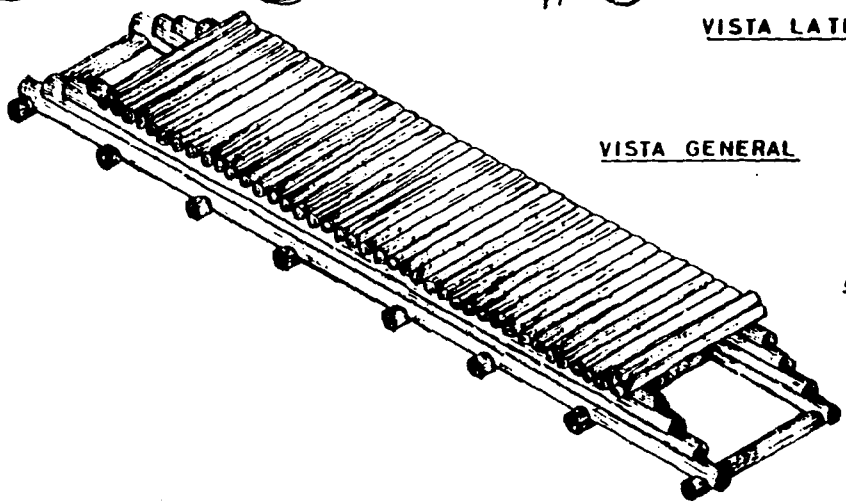
NORMAL RIGHT OF WAY : 20 m.





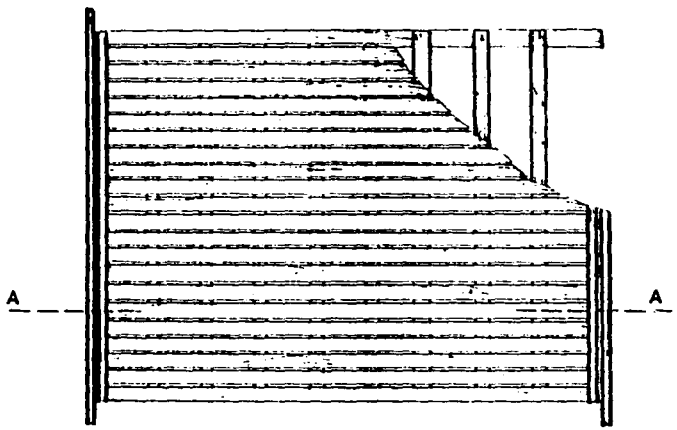






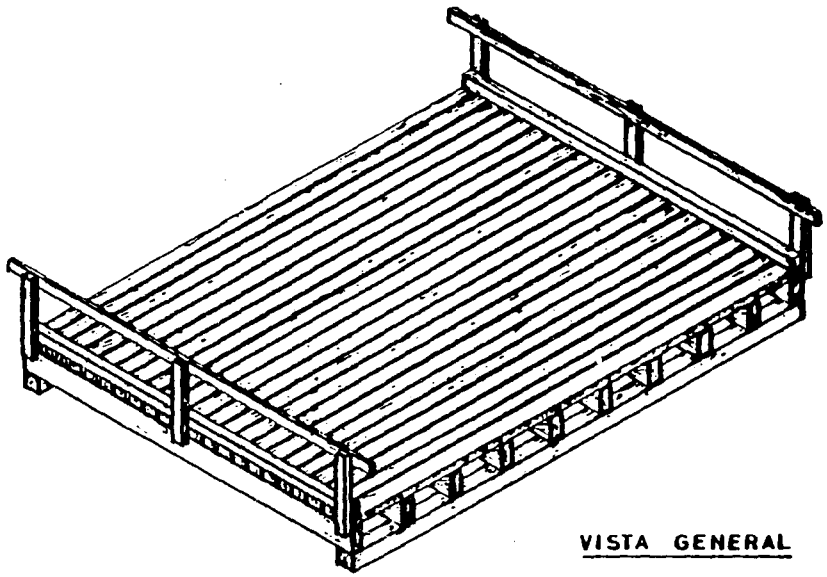
ALCANTARILLA RUSTICA DE MADERA NO ASERRADA

RUSTIC CULVERT OF READILY AVAILABLE LOGS

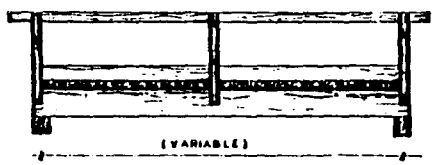


PLANTA

SECCION A_A



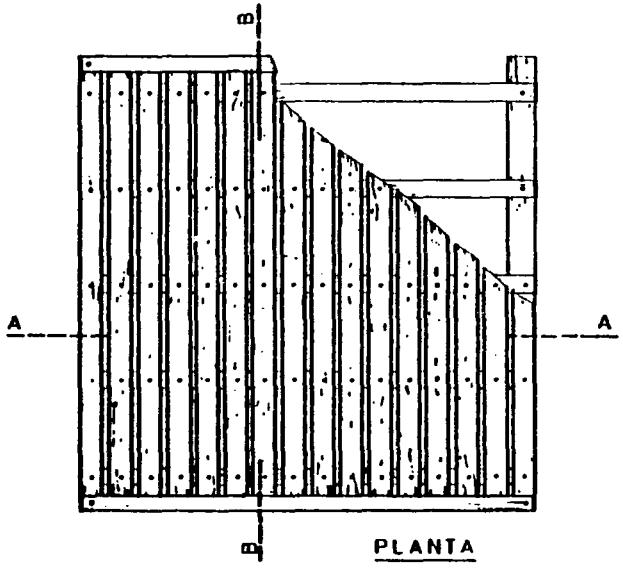
VISTA GENERAL



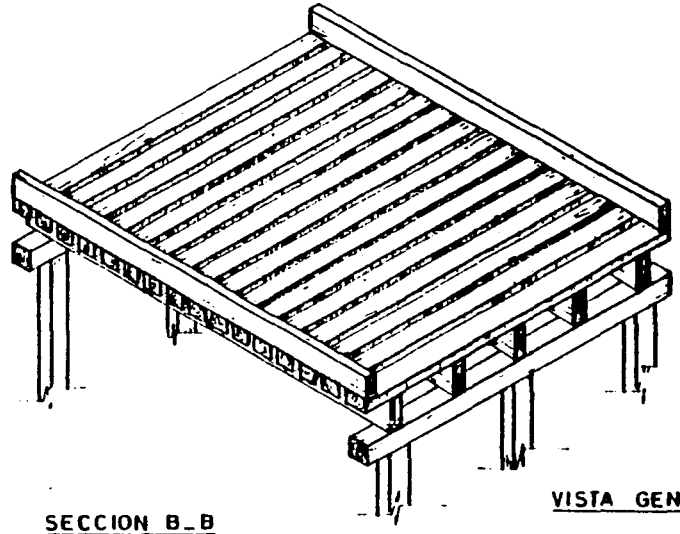
VISTA LATERAL

PUENTE DE MADERA
LUZ VARIABLE

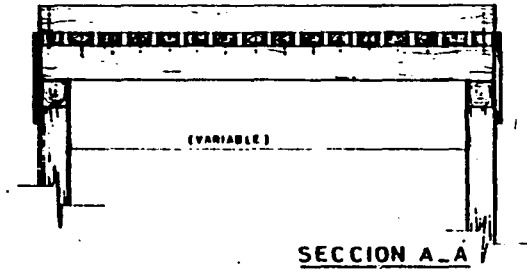
WOOD BRIDGE
GENERAL DETAILS



PLANTA

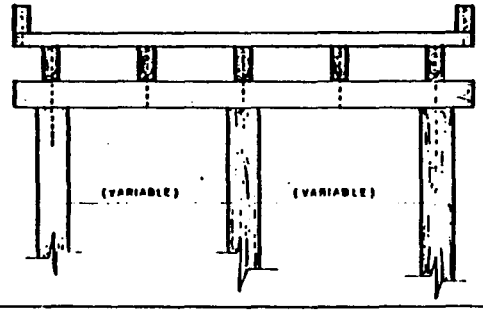


VISTA GENERAL



SECCION A_A

SECCION B_B

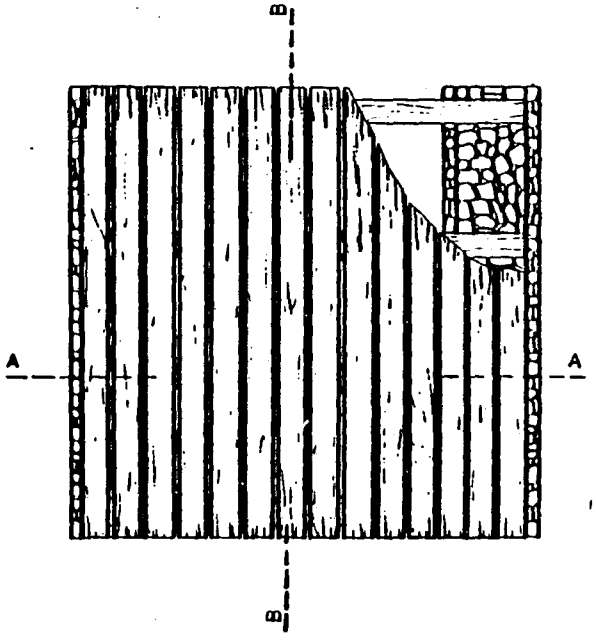


ALCANTARILLA TIPO

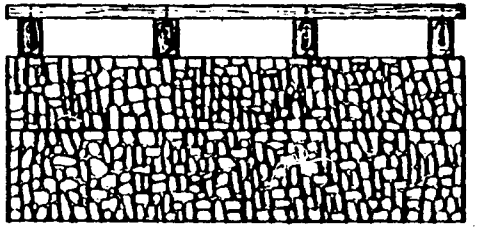
PUENTE _ CONSTRUIDA TOTALMENTE EN MADERA

CULVERT/BRIDGE, TYPE

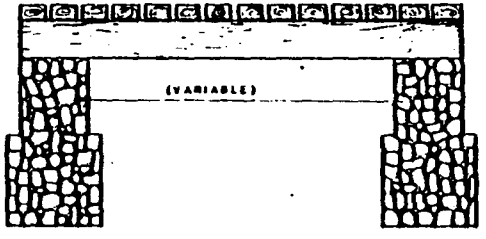
ALL WOOD



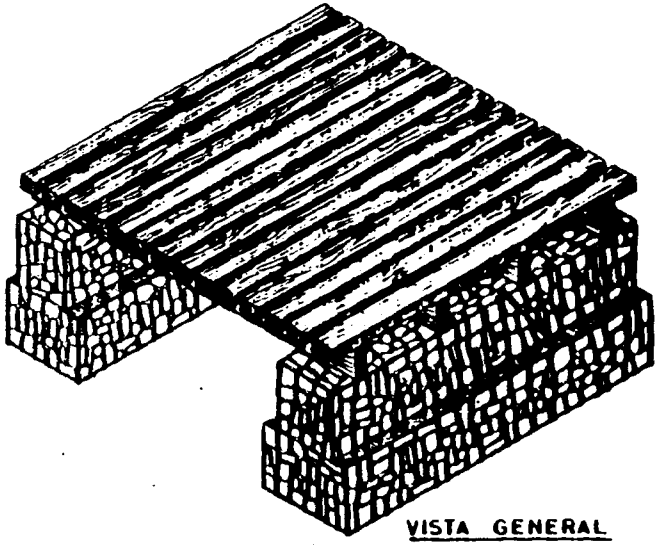
PLANTA



SECCION B-B



SECCION A-A



VISTA GENERAL

ALCANTARILLA MIXTA
(piedra y madera)

CULVERT
OF
STONE (OR BRICK) MASONRY
AND
PLANKING

COST SUMMARY
OF
TYPICAL CANDIDATE ROADS

No.	Location of Section of Road	Type of Work	Km.	Cost per Km.	Total Cost
	Paraguarí and Cordillera				
1	Cholo16 toward Valenzuela	Full Reconstruction	25.0	7395	184,87[illegible]
2	Last 8 Km into Valenzuela	" "	8.0	8676	69,40[illegible]
	Sub-total		33.0	7706	254,28[illegible]
	Caaguazú, NW of Col. Oviedo				
3	First 10 Km	Full Reconstruction	10.0	4375	43,750
4	Next 5.2 Km	Bottleneck	5.2	4016	20,883
5	Gen. Romero - La Pastora (a)	Full Reconstruction	6.3	4774	30,076
6	Gen. Romero - La Pastora (b)	" "	4.8	4738	22,742
7	Gen. Romero - La Pastora (c)	" "	7.5	4167	31,253
34	Col. Oviedo to West	" "	2.0	3903	7,806
35	From 2 Km W. Col. Oviedo to Genaro Romero	" "	8.5	4892	41,582
		Sub-total	44.3	4472	198,092
	Paraguarí				
10	Paraguarí to Caballero	Bottleneck	33.0	1435	47,355
11	Caballero to Ybytymí	"	11.7	1395	16,322
12	Ybytymí thru Bamboo Swamp	"	11.2	789	8,837
13	Bamboo Swamp to La Colmena	Full Reconstruction	12.0	4445	53,340
		Sub-total	77.7	1620	125,894

COST SUMMARY OF SELECTED CANDIDATE ROADS

No.	Location of Section of Road	Type of Work	Km.	Cost per Km.	Total $ Cost
	Cordillera				
14	Northerly from 8 Km East/Caacupé	Full Reconstruc.	6.5	7430	48,295
15	Caacupé to Piribebuy (a)	" "	8.5	5603	47,625
16	Caacupé to Piribebuy (b)	" "	11.4	5492	62,609
26	From 1 1/2 Km North of Piribebuy to W. to Compañía Itá Byrá	" " and Relocation	3.2	5154	16,4[illegible]
27	From 3 Km N. of Piribebuy, E. to Compañía Yacaré-y	Full Reconstruc.	3.6	5228	18,820
28	From 3 Km W. of Piribebuy to SW to Compañía Cordillera	" "	6.9	4248	29,310
29	From 2.2 Km W of Route 2 at 3.2 Km W of Itacurubí, thence S to Potrero Angelito	" "	4.1	6893	28,260
30	From just W of Eusebio Ayala, SW to Compañía Mariscal López	" "	7.4	6898	51,045
31	Cía. Marical López to Piribebuy	" "	8.8	8416	74,060
32	From S of Piribebuy E to Tapé Guazú	" "	5.2	4819	25,060
33	Tapé Guazú to Route 2	" "	10.4	3783	39,345
		Sub-total	76.0	5802	440,919

COST SUMMARY OF SELECTED CANDIDATE ROADS

No.	Location of Section of Road	Type of Work	Km.	Cost per Km.	Total $ Cost
	Guairá				
17	Villarrica to Potrero Ramírez	Full Reconstruc.	14.7	4256	62,563
18	Potrero Ramírez to Itapé	Bottleneck	7.7	1960	15,092
19	From 7 Km S Villarrica E to Doña Juana	Full Reconstruc.	5.7	2764	15,755
21	From 8 Km S Villarrica SW to San Salvador, omitting San Salvador to Borja	Full Reconstruc.	12.0	3280	39,360
22	Borja to Colonia Boquerón	" "	4.8	2746	13,267
23	From 7.5 Km E. Mbocayaty, N. to Natalicio Talavera	Bottleneck	7.9	2074	16,385
24	N.Talavera to M.J.Troche	Full Reconstruc.	6.1	4741	28,920
25	First 7 Km, M.J.Troche to E.	" "	7.0	2813	19,690
		Sub-total	65.9	3202	211,032
		TOTAL	296.9	4144	1,230,220

ANNEX IV
Exhibit 4

EQUIPMENT LIST

EQUIPMENT PROCUREMENT

SUMMARY

I T E M	Order 1	Order 2
Heavy Equipment	$1,624,000	$781,500
Spare Parts 20%	324,800	156,300
	1,948,800	937,800
Office, field equipment	24,400	-
Hand tools, bolts	30,650	36,450
Subtotal	2,003,850	974,250
Shipping & Ins. 10%	200,385	97,425
	2,204,235	1,071,675
Inflation (15%)	330,635 (30%)	321,502
	$2,534,870	1,393,177
Total Equipment	$3,934,000 (rounded)	

171

PARAGUAY RURAL ROADS

TENTATIVE EQUIPMENT LIST

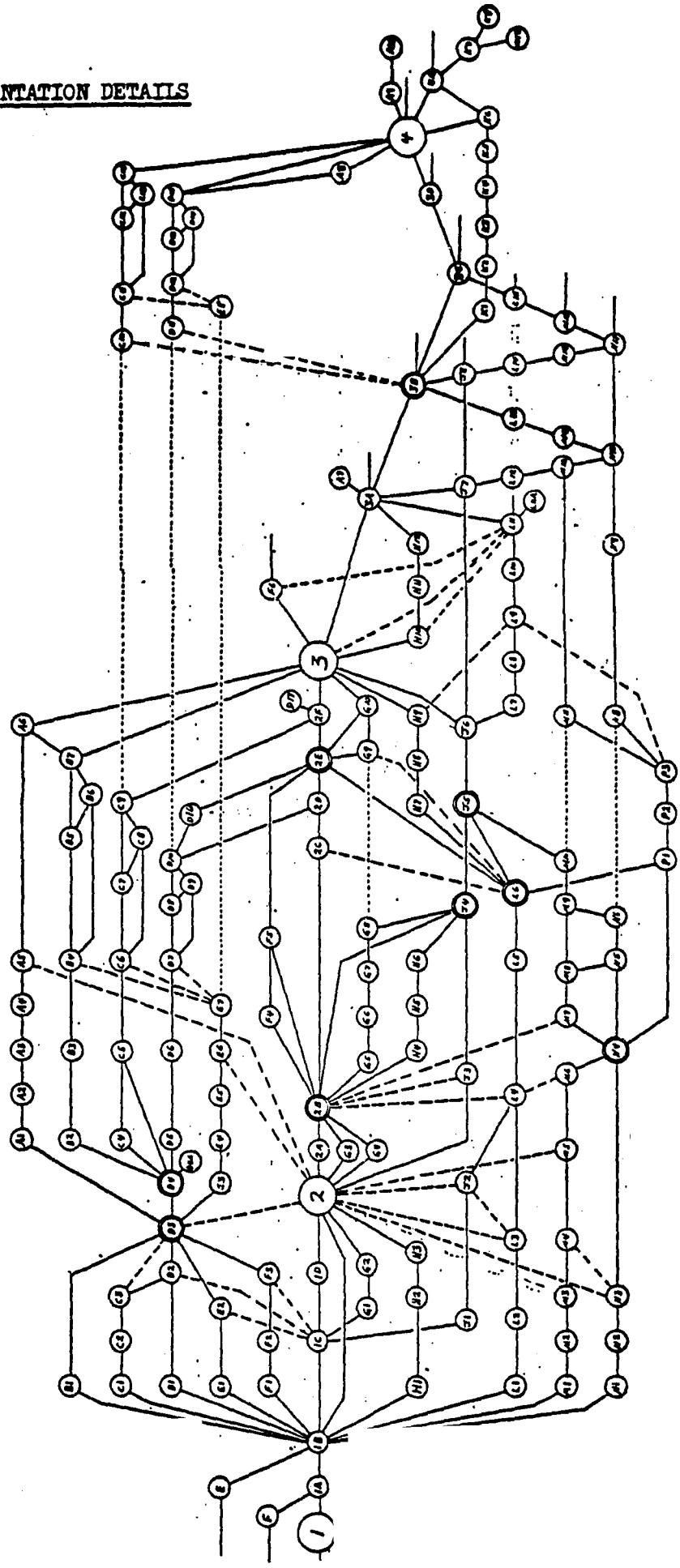
Quantity 1o.	2o.	Total	ITEM	Unit Price	TOTAL
			Heavy Equipment Equipo Pesado		
4	2	6	Motorgrader (CAT 120B equiv.) Motoniveladora (equiv. CAT 120 B)	55,000	330,000
4	-	4	Grader (Melga NAM-30 equiv.) Niveladora (tipo Melga NAM-30)	7,000	28,000
8	-	8	Pan scraper(3 m^3) Pala de arrastre (3 m^3)	6,000	48,000
6	-	6	Farm tractor (80 HP) Tractor Agrícola (80 HP)	13,000	78,000
4	-	4	Farm tractor, hydraulic pump (110 HP) Tractor agrícola, sist. hidráulico (110 HP)	20,000	80,000
2	2	4	Vibrating Compactor, tractor pulled Compactador vibratorio remolcable	7,000	28.000
4	-	6	Bulldozer (CAT D6 equiv.) Topadora (equiv. a CAT D6)	85,000	340,000
-	2	2	Bulldozer (CAT D7 equiv.) Topadora (equiv. a CAT D7)	115,000	230,000
2	2	4	Frontend loader, rubber tire (CAT 950 equiv.) Pala cargadora sobre neumáticos (equiv. a CAT 950)	70.000	280,000
8	8	16	Dump truck (5m^3) Camión volquete (5m^3)	18,000	288,000
4	-	4	Disc, industrial type Rastra de discos	2,500	10,000
				Sub-total	1,740,000

Quantity 1o.	2o.	Total	ITEM	Unit Price	TOTAL
			Service Vehicles **Vehículos de Servicio**		
4	-	4	Pick-up truck (3/4 T), 4 Wheel drive Camioneta doble tracción (3/4 T).	8,500	34,000
z	-	2	Pick-up Double cabin, 4-wheel drive Camioneta doble tracción (tipo rural)	10,000	20,000
4	1	5	Flatbed truck, Stake sides, (1 1/2 T) Camión plataforma (1 1/2 T)	12,500	62,500
1	1	2	Water truck (5,500 lt.) Camión cisterna p/agua (5,500 lt.)	30,000	60,000
				Sub-total	176,500
			Field support equipment Equipo de apoyo		
1	-	1	Mobile crane (5 t) Grúa (5 t)	40,000	40,000
2	z	4	Mobile shop (Van & trailer) Taller móvil	50,000	200,000
4	-	4	Lubrication truck, (2 1/2T) Camión de engrase (2 1/2 T)	20,000	80,000
1	-	1	Low-boy truck (for 20 T) tractor Camión transportador (para 20 T)	30,000	30,000
1	-	1	Pile driver Hinca pilotes	30,000	30,000
2	-	2	Cement mixer (0.2 m^3) Hormigonera (0.2 m^3)	5,000	5,000
1	1	2	Water pump & hose Bomba centrífuga para agua	1,000	2,000
4	-	4	Water pump & hoses for pressure cleaning Instalación hidráulica p/limpieza	1,500	6,000
4	-	4	Shop Air-Compressor/attachments Compresor de aire	3,000	12,000

Quantity 1o.	2o.	Total	ITEM	Unit Price	TOTAL
			Welding machine/attachments		
4	-	4	Equipo para soldadura	1,000	4,000
			Electric Generators, (75 Kva)		
4	-	4	Generador eléctrico, (75 Kva)	20,000.	80,000
				Sub-total	489,000
			Office & Field Support Apoyo para oficina y campo		
			Radio Communication (short wave)		
7	-	7	Radio receptor y transmisor (onda corta)	1,200	8,400
			Engineering office equipment		
6	-	6	Equipo para oficina de ingeniería	1,000	6,000
			Surveying equipment		
2	-	2	Equipo de topografía	5,000	10,000
				Sub-total	24,400
			Hand tools, Bride spikes & bolts & Implements Herramientas, herrajes para puentes, y accesori		
			Pick		
200	400	600	Pico	4.	2,400
			Shovel		
200	400	600	Pala	4.	2,400
			Wheelbarrow		
100	200	300	Carretilla de mano	30	9,000
			Machette		
300	600	900	Machete	4.	3,600
			Bridge bolts, spikes, etc. Herraje para puentes	L.S.	10,000
			Carpenter tool set		
5	5	10	Herramientas de carpintería	200	200
			Mechanic tool set		
5	5	10	Herramientas de mecánica	500	5,000
			Assorted Wrench set		
5	5	10	Juego de llaves	70	700
			Miscellaneous extra, tolls & Supplies Gastos extra, herramientas y reposición	L.S.	12,000
				Sub-total	67.100

Direct value total $2.497.000.-

IMPLEMENTATION DETAILS



PROJECT IMPLEMENTATION FLOW DIAGRAM

-1	AID/W approves Project and informs USAID
1 -1A	USAID advises MOPC to proceed with Project
F -1A	Ongoing GDRC project staff available
1A-1B	MOPC creates "Caminos Vecinales" by Ministerial Decree to implement project
E -1B	Ongoing USAID Engineer and Asst.Engineer available
1B-2	MOPC submits copy of Decree to USAID

1B-1C	MOPC/CV and USAID prepare and sign Loan Agreement
1C-1D	GOP Congress ratifies Loan Agreement and GOP President signs ratification
1D-2	GOP Attorney General submits Legal Opinion

1B-B1	CV requests loan of desks, typewriters, and office space for additional CV staff
B1-D3	MOPC fulfills request

1B-C1	CV/USAID Engineer prepare lists of suppliers of road construction equipment, vehicle, etc.
C1-C2	CV requests catalogs and reference materials from DR and writes suppliers for new catalogs, etc.
C2-C3	CV receives catalogs and reference materials
C3-D3	CV prepares materials for AID equipment procurement specialist

---

1B-D1	USAID Engineer requests procurement specialist from AID/W (Technical Support funds)
D1-D2	AID/W approves request
C3-D2	(Catalogs and reference material available) USAID Engineer notifies specialist to mobilize
(1C-D2)	(Loan Agreement signed)
D2-D3	Procurement Specialist travels to Asunción

1B-E1	CV advertises for a secretary and/or clerk typist
E1-E2	CV selects person(s) best qualified
(1C-E2)	(Loan Agreement signed)
E2-D3	MOPC hires CV secretary and/or clerk typist

1B-F1	CV request assistance of bilingual procurement staff from MOPC/DR
F1-F2	MOPC/DR makes arrangements with CV for availability of procurement staff
F2-F3	USAID approves arrangements
(1C-F3)	(Loan Agreement signed)
F3-D3	MOPC/DR provides procurement staff on date set for arrival of AID/W specialist
(D3-2)	(CV provides evidence to USAID that CV office and procurement section are operational)

1B-H1	MOPC selects Project Director (CV Director) and submits biodata to USAID
H1-H2	USAID approves candidate
H2-H3	MOPC officially appoints CV Director full time
H3-2	MOPC submits evidence of appointment to USAID

1B-L1	CV advertises for four regional (RRC) directors
L1-L2	CV selects candidates and submits their biodata to USAID
L2-L3	USAID approves candidates
(L3-2)	(USAID approval of four RRC Directors is a condition precedent to first disbursement)
L3-L4	MOPC hires/contracts the four RRC Directors

1B-M1	CV/USAID Engineer prepare qualifications for Sociologist to work with CV Educationist and with District (LRC) and local (RPC) road committees, and prepare draft contract
M1-M2	CV advertises position
M2-M3	CV receives applications and selects best candidate
M3-M4	CV submits biodata to USAID, along with draft contract
(N3-M4)	(CV Educationist approved by USAID)
M4-M5	USAID approves candidate and contract
(2 -M5)	(Conditions precedent to first disbursement met)
M5-M6	CV and Sociologist sign contract
(L4-M6)	(Four RRC Directors hired)
M6-N4	Sociologist mobilizes on pre-determined date

1B-N1	CV advertises for Educationist to work with regional (RRC), district (LRC) and local (RPC) road committees
N1-N2	CV receives applications, selects best candidate and submits biodata to USAID
N2-N3	USAID approves candidate
N3-N4	MOPC hires/contracts CV Educationist fulltime

1C-G1	CV/USAID Engineer prepare Project Budget Plan
G1-G2	MOPC/MOF approve Budget Plan
G2-2	USAID approves Budget Plan

1C-J1	CV/USAID Engineer prepare training tour itinerary for the four RRC Directors
J1-J2	USAID Engineer and USAID Training Officer prepare PIO/P
(L3-J2)	(The four RRC Directors have been approved by USAID)
(2 -J2)	(The conditions precedent to first disbursement have been met)
J2-L4	USAID approves PIO/P and advances tickets and travel funds
(2B-L4)	(GOP counterpart project funds available)
L4-L5	RRC Directors undertake training tour
L5-L6	RRC Directors return to Asuncion and are available full time to initiate project activities

---

D3-A1 CV/USAID Engineer prepare qualifications for Supply Specialist to set-up spare parts cardex and inventory system at regional (RRC) centers, and prepare draft contract
A1-A2 CV advertises position
A2-A3 CV receives applications and selects best candidate
A3-A4 CV submits biodata to USAID, along with draft contract
A4-A5 USAID approves candidate and contract
(2-A5) (Conditions precedent to first disbursement have been met)
A5-A6 CV and Supply Specialist sign contract
B7-A6 (CV receives arrival date of vehicle spare parts and supplies) CV notifies Supply Specialist to mobilize on a pre-determined date
A6-3 Supply Specialist travels to Asuncion

D3-D4 AID/W Procurement Specialist/CV/USAID Engineer prepare lists and technical specifications for road construction equipment, vehicles, spare parts, and other equipment, materials and supplies to be purchased with dollars under the loan
D4-D4A AID/W Specialist departs Asuncion

D3-E3 CV/USAID Engineer select US bank to act as agent for dollar procurement under AID Letter of Commitment. (Riggs Bank in Washington, D.C. is recommended)
E3-E4 CV writes bank and requests bank to act as agent
E4-E5 Bank accepts by letter
E5-E6 CV informs USAID of selected agent bank (CV submits copy of letter from bank) and requests AID to issue Letter of Commitment to bank
2-E6 (Conditions precedent to first disbursement have been met)
E6-E7 AID issues Letter of Commitment and USAID informs CV
(E7-E8) (Ongoing CV/USAID/Bank/AID/Supplier letter of credit activities)

D4-B2 CV sends out requests for bids and/or price quotations for spare parts, and other equipment, materials and supplies to be purchased under Letter of Commitment
B2-B3 CV receives bids and/or quotations
B3-B4 MOPC/CV select supplier and CV obtains USAID approval to proceed with letter of credit
(B7-B4) (AID Letter of Commitment has been issued)
B4-B5 CV notifies supplier and requests agent bank to issue letters of credit to supplier
B5-B7 Suppliers receive letters of credit and make shipments
B4-B6 MOPC/CV requests exoneration of import duties from Ministry of Finance
B5-B6 CV receives copies of letters of credit, invoices, bills of lading, etc.
B6-B7 MOPC/CV receive import permits
(B7-2) (CV notifies Supply Specialist of date to mobilize)
B7-3 Carrier notifies CV that goods have arrived Asuncion. CV removes goods from Custom warehouse and delivers them to project warehouse for later distribution to regional (RRC) centers.

D4-C4	CV sends out requests for bids for trucks/vehicles (Bids include vehicles to be shipped during following year)
C4-C5	CV receives bids
D4-C5	MOPC/CV obtains VEHICLE IMPORT DECREE from Ministry of Finance
C5-C6	MOPC/CV selects suppliers and CV obtains USAID approval to proceed with letter of credit
(E7-E6)	(AID letter of Commitment has been issued)
C6-C7	CV notifies suppliers and requests agent bank to issue letter of credit
C7-C9	Suppliers receive letter of credit and make shipment
C6-C8	MOPC/CV requests exoneration of import duties from Ministry of Finance
C7-C8	CV receives copies of letter of credit, invoices, bills of lading etc.
C8-C9	MOPC/CV receives import permit
C9-2F	Carrier notifies CV that vehicles have been received; CV removes vehicles from customs and delivers them to LOCAL REPRESENTATIVE for factory delivery service, for later distribution to original (RRC) Centers
C9-C10	Suppliers waiting notification to make second shipment

---

D4-D5	CV sends out requests for bids for road construction equipment, including (1) a Spanish qualified factory representative to train equipment operators; (2) equipment operation and maintenance manuals in Spanish. (Bids include equipment to be shipped during following year.)
D5-D6	CV receives bids
D6-D7	MOPC/CV selects suppliers and CV obtains USAID approval to issue letter of credit
(E7-D7)	(AID Letter of Commitment has been issued)
D7-D8	CV notifies suppliers and requests agent bank to issue letter of credit
D8-D10	Suppliers receive letter of credit and make shipment
D7-D9	MOPC/CV requests exoneration of import duties from Ministry of Financ
D8-D9	CV receives copies of letter of credit, invoices, bills of lading etc.
D9-D10	MOPC/CV receives import permit
D10-2D	Carrier agent notifies CV that equipment has arrived. CV removes equipment from customs and delivers them to MOPC facilities in San Lorenzo.
(D10-D11)	(Supplier waiting notification to make second shipment.)
D10-D16	CV notifies supplier of date to send factory representative
D16-2E	Factory representative travels to Asuncion

2-2A	MOPC/CV requests Central Bank to open two project accounts (1) for road conscription funds; (2) for GOP counterpart funds, plus initial yearly amounts to be reimbursed by AID.
2A-2B	Central Bank opens accounts and issues check books to CV. (All project expenditures will be paid by check.)

2-G3	MOPC/CV requests disbursement of GOP counterpart funds from Ministry of Finance for first project year (which corresponds to calendar year and GOP fiscal year).

G3-2B	Ministry of Finance disburses funds which are deposited in Central Bank

---

2-G4	CV requests transfer of road conscription funds for project area from DGRC to CV
G4-2B	DGRC transfers road conscription funds and accounts to CV

2-J3	CV contacts other ministries, agencies, offices etc. and prepares lists of maps and other data to be obtained for project.
(2B-J3)	(Project funds available)
J3-J4	CV purchases/obtains maps and other data
J4-J5	CV Technical Section prepares maps showing all roads and cart trails in project area, status of road maintenance etc.

2B-F4	CV obtains decree fromMOPC to purchase tax free gasoline and diesel fuel from ESSO/SHELL
F4-F5	CV purchases coupons from ESSO/SHELL
2B-F5	CV determines availability of diesel fuel and gasoline in each town in project area.
F5-2E	CV makes arrangements for storage of fuel

2B-G5	CV prepares specifications for office and drafting furniture, office materials and supplies for central and regional offices.
G5-G6	CV issues requests for bids
G6-G7	CV receives bids and makes selection of suppliers
G7-G8	MOPC/CV prepares purchase order
2B-T4	CV makes arrangements with MOPC for additional office space.
G8-T4	CV receives furniture, materials and supplies.

2B-H4	CV/USAID engineer prepares qualifications for remainder of CV staff
H4-H5	CV advertises positions
H5-H6	CV receives applications and selects best candidates (Division heads may be subject to USAID approval)
H6-T4	MOPC hires rest of CV staff

2B-2C	CV advertises for construction equipment operators
(I6-2C)	(Four RRC Directors available for selection)
2C-2D	CV receives applications and RRC Directors/CV select best candidate
(D10-2D)	(Construction Equipment out of customs and serviced by local representative)
2D-2E	MOPC hires operators
I6-2E	Four RRC Directors available to participate in training of operators
2E-2F	Factory Representative trains operators and RRC Directors on operation and maintenance of equipment

2F-D17	Factory Representative demobilizes
2F-3	Equipment moved to regional centers

2E-G9	CV advertises for remaining positions to be filled for regional centers
(G8-G9)	(office furniture for regional centers available)
(L6-G9)	(Four RRC Directors available for selection)
G9-G10	CV receives applications and RRC Directors/CV select candidates.
2E-G10	RRC Directors/CV make arrangements for regional offices
G10-3	MOPC hires regional staff

N4-M7	Sociologist/Educationist contact all LRC's in project area and explain purpose and function of project
(2B-M7)	(Project funds available)
M7-M8	CV requests proposals from LRC's
N4-N5	Sociologist/Educationist contact all active RPC's in project area and explain purpose and function of project.
M8-N5	LRC's request proposals from selected RPC's who can fulfill criteria
M8-M9	LRC's review proposals already on hand for criteria selection
N5-N6	RPC's prepare proposals for easily identifiable subprojects
N6-M9	RPC's submit proposals to LRC's
M9-M10	LRC's review proposals and select subprojects
M10-J5	LRC's submit selected subproject proposals to RRC's

L6-J5	Four RRC Directors available for selection of subprojects
J5-J6	Using special road maps, cadastral plans etc, RRC Directors and CV select subprojects for first SIX MONTHS of operations
J6-3	Copies of maps, schedules, etc. made available to RRC's and LRC's.

N4-P1	Sociologist/Educationist prepare draft of OPERATIONS MANUAL to be used by LRC's and RPC's
L6-P1	Four RRC Directors available to review draft of OPERATIONS MANUAL
P1-P2	RRC Directors/CV approve manual and submit draft to USAID
P2-P3	USAID approves manual
P3-M11	OPERATION MANUAL printed and distributed to LRC's
P3-N8	OPERATION MANUAL distributed to RPC's
7	

L6-H7	RRC Directors/CV prepare draft of ADMINISTRATION MANUAL, based on manuals obtained from Cadastral Project, IDM, CREDICOOP etc.
H7-H8	MOPC approves ADMINISTRATION MANUAL for project activities and CV submits manual to USAID
H8-H9	USAID approves manual
H9-3	ADMINISTRATION MANUAL printed and distributed to RRC's and LRC's (may be made available to RPC's also)

181

J6-L7	RRC/CV technical staff visit sites of subprojects and prepare list and specifications for road materials to be purchased
L7-L8	CV sends out requests for bids
L8-L9	CV receives bids and selects suppliers
(H9-L9)	(ADMINISTRATION MANUAL approved)
(P3-L9)	(OPERATIONS MANUAL approved)
L9-L10	MOPC/CV prepares purchase order.
L10-L11	Supplier delivers road materials to RRC's
L11-3A	RRC distributes materials to subproject sites
L11-L11A	CV submits bills to USAID for reimbursement on a "pari passu" rate to be determined at beginning of each project year
L11-	(Purchase of road materials is a continuous and repetitive activity)

3-F6	RRC Directors/USAID Engineer develop equipment and vehicle maintenance schedule, to include daily equipment and vehicle inspection by operators and drivers.
F6-	Maintenance schedule in Operation

3-H10	Supply Specialist develops spare parts warehouse and inventory system for regional centers, and CV
H10-H11	Supply Specialist trains RRC personnel on all of system
HH-H12	Supply Specialist trains CV and MOPC personnel on use of system
H12-3A	Supply Specialist reviews progress at regional centers
3A-A7	Supply Specialist submits report to CV and USAID and demobilizes.

3-3A	Work on subprojects carried out during first three months period
3A-	On-going scheduled road maintenance
3A-3B	Work on subprojects carried out during second three months period
3B-	On-going scheduled road maintenance
3B-3C	Work on subprojects carried out during third three month period
3C-	On-going scheduled road maintenance
3C-3D	Work on subprojects carried out during fourth three month period
3D-	On-going scheduled road maintenance
3D-4	Work on subprojects carried out during fifth three month period
4-	On-going scheduled road maintenance
4-4A	Work on subprojects carried out during sixth three month period
4A -	Subproject activities continue on a quarterly work schedule

---

(C9-C10)	(Supplier waiting for instructions to initiate second shipment of vehicles)
(3B-C10)	(Vehicles from first shipment operated satisfactorily for six months)
C10-C11	CV advises supplier to make second shipment
(E8-C11)	(AID letter of commitment still valid)
C11-C12	CV requests bank to issue letter of credit to supplier
C12-C14	Supplier receives letter of credit and makes shipment
C11-C13	MOPC/CV requests exoneration of duties from Ministry of Finance
C12-C13	CV receives copies of invoice, bill of lading, etc. from supplier
C13-C14	MOPC/CV receives import permit
C14-4	Vehicles arrive Asuncion and are cleared from customs and delivered to regional centers.

(D10-D11) (Supplier waiting for instructions to proceed with second shipment of road construction equipment)
(3B-D11) (Equipment from first shipment operated satisfactorily for six months)
D11-D12 CV advises supplier to make second shipment
(E8-D12) (AID letter of commitment still valid)
D12-D13 CV requests bank to issue letter of credit to supplier
D13-D15 Supplier receives letter of credit and makes shipment
D12-D14 MOPC/CV requests exoneration of duties from Ministry of Finance
D13-D14 CV receives copies of invoices, bills of lading, etc, from supplier
D14-D15 MOPC/CV receives import permit
D15-4 Equipment arrives Asuncion and is cleared from customs and delivered to regional centers.

(M10-M11) (LRC's complete on-going activities while waiting new instructions from CV/RRC's)
(N6-N8) (RPC's carry on normal road maintenance activities while waiting new instructions from CV/LRC's)
M11-M12 Sociologist/Educationist/RCC Directors work with LRC's on use of Project Operations Manual
N8-N9 Sociologists/Educationist work with RPC's on community development of road maintenance. Project Operations Manual introduced to more progressive RPC's
N9-N10 Selected RPC's prepare proposals for subprojects to be initiated during THIRD three month period of operation

---

J6-J7 CV Technical Section continues to develop and up-date maps and other related information for project area.
J7-J8 (Same as J6-J7)
J8 CV Technical Section initiates work for other departments

3A-J7 At the end of FIRST three months period of operations, RPC's submit progress report to CV, along with maps to be updated
J7-L12 CV Technical Section updates maps and returns them to RRC's along with other new information.
L12-M12 LRC's contact RPC's for subprojects to be carried out during FOURTH PERIOD
N10-M13 Selected RPC's submit proposals for subprojects to be carried out during THIRD period (See N9-N10)
M13-L13 LRC's review THIRD period proposals and submit selected RPC subprojects to RRC's
L13-3B RRC visit selected subproject sites and prepare THIRD period operations

---

3B-J8 At end of SECOND three month period of operations, RCC's submit progress reports to CV along with maps to be updated. (Activity repeated at the end of each quarter)
J8-L14 CV Technical Section updates maps and returns them to RRC's along with other new information (Activity repeated on a continuous basis.)

L14-M14	Same as L12-M12 for FIFTH period (Activity repeated on a quarterly basis)
M14-N11	Same as M12-N10 for FIFTH period (Activity repeated on a quarterly basis)
N10-N11	Same as N9-N10 for FOURTH period (in response to M12-N10). (Activity repeated on a continuous basis.)
N11-M15	Same as N10-M13 for FOURTH period. (Activity repeated on a continuous basis).
M15-L15	Same as M13-L13 for FOURTH period. (Activity repeated on a quarterly basis, or as required)
L15-3C	Same as L13-3B for FOURTH period (Activity repeated on a continuous basis)

D15-A8	CV notifies Supply Specialist to mobilize on predetermined date
A8-4	Supply Specialist travels to Asuncion
4-A9	Supply Specialist reviews storage, inventory and record-keeping system of spare parts and supplies, and recommends changes, if required
A9-A10	Supply Specialist departs

3B-K1	CV/USAID Engineer prepare request for consulting firm to undertake project evaluation study
K1-K2	CV sends out requests for qualifications
3B-K2	CV/USAID prepare criteria for pre-qualification selection
K2-K3	CV receives qualification data and selects best qualified firm.
K3-K4	CV nogotiates contract and submits draft to USAID for approval
K4-K5	USAID approves contract and opens letter of commitment
K5-K6	CV signs contract and requests bank to issue first letter of credit
4-K6	CV notifies firm to mobilize personnel

K6-4A	Consulting firm travels to Asuncion (to arrive at end of sixth quarter of operations).
4A-K7	Consulting firm undertakes study and makes recommendations
K7-K8	Study reviewed by Consultant/MOPC/CV/DR/USAID and Consultant departs
K7-M17	Sociologist departs at end of 24-month tour

(N3-2)	(USAID approval of EDUCATIONIST is condition precedent to first disbursement.)

(3-L11)	(Evidence that the CV Unit and Regional Centers are staffed and operational is a condition to first reimbursement for materials)
(H10-L11)	(Evidence that a SUPPLY SPECIALIST has been contracted and a spare parts system being developed is a condition to first reimbursement for materials)
(F6-L11)	(Evidence that an equipment maintenance schedule has been developed is a condition to first reimbursement for materials)

ANNEX V.I

USAID/Paraguay
March 3, 1977

ANALYSIS OF THE ROAD COMMITTEE SYSTEM

By: Marino J. Marín
Fredrick C. Catton
Rudolf H. Kamann
Antonio E. Penayo

The Road Committee System originated in Paraguay in 1936 when a scheme of compulsory labor for rural road construction, designed undoubtedly after similar models practiced in Germany and Italy, was introduced. That system was locally based and was carried out by local authorities who convoked the citizens when needed for road repair and maintenance. At that time labor was the primary obligation; payment of exemption fees was the exception to the rule.

The system subsequently underwent some changes which tended towards centralization in the Ministry of Public Works and placed more emphasis on payment of fees. This was in line with the gradual introduction of road building equipment which required financial efforts far beyond the resources of small local communities. Thus we arrive at Decree-Law 3639, enacted on March 31, 1951, which is still the governing instrument although it has undergone some updating.

The law establishes a three-level organization headed by the General Directorate of Road Committees which is an integral part of the Ministry of Public Works. In each Department a Regional Committee coordinates the efforts of the Local Committees which are supposed to carry out the actual work on roads, bridges, etc. The Committee of the Capital (Asunción) is somewhat unique because of the numerous constituency (about 30% of the total population of the country) and consequently its larger resources.

The Committees are collegiate bodies with members appointed by higher level authority. Appointments are limited to three years for the Committee of the Capital, two years for the other Regional Committees and one year for the Local Committees; however, reappointments are the rule rather than the exception.

All Committees are to prepare annual budgets and proposals for road construction which are to be approved by the corresponding Regional Committees or by the General Directorate if submitted by the regions. They all, except the regions, take part in the preparation of the General Census of conscripts. The regions also have the authority of extending the annual deadline, normally March 31, for compliance with the law.

Regional Committees appoint their own employees and those of the Local Committees. They also supervise the Local Committees established within their respective jurisdiction, while the General Directorate has the duty of supervising all the Committees on all levels.

The law establishes basic requirements for persons who are appointed as members of the Committees and minimum standards for the functioning of the Committees, their records and bookkeeping.

The collection and subsequent transfer of exemption fees are entrusted to the municipalities and not the Committees, as is handled in practice. Also, the individual cards which serve as proof for compliance with the law are supposed to be distributed by the General Directorate free of charge, and the format is prescribed as one having room for at least ten years of service annotations.

Another important proviso is the distribution between the Committees and the General Directorate of the fees collected. It was altered later by Decree-Law and may be subject to new changes.

Finally, persons delinquent under the law cannot occupy positions in public or private organizations, firms, etc. Judges of the Peace and Notaries Public are bound by law to require the exhibition of the Cards before they can execute any deed or writ.

To present our multiple findings in a logical order we have related them to the applicable section of the basic law, whenever possible. This would permit a judgement about which provisions should be enforced and which eventually ought to be left dormant for the sake of the project.

Road Conscription Service (Art. 1)

The stated purpose of the conscription service is the construction of roads which link cities, villages, colonies and centers of agricultural production but are not a part of the national highway system. It should be noted that the purpose of the law is the construction of roads and not only their maintenance.

Citizens subject to Conscription (Art. 2)

All the residents of the country regardless of nationality and between the ages of 20 and 50 are subject to conscription. Cases of exemption are specified later in article 6.

Categories of Conscripts (Art. 3)

For the purpose of determining the length of labor service or the amount of the exemption fees, the citizenry is divided into three

categories by age; i.e. from 20 to 30, 31 to 40, 41 to 50.

Length of Services (Art. 4)

The three categories established in the preceding article are obliged to work 6, 5, or 4 days annually on road construction.

Exemption Fee (Art. 5)

The fees established in the original law (1951) are naturally outdated and they have been, in fact, brought up to date in several occasions. At present they range from 450 to 550 Guaranies each in the Capital and from ₲350 to ₲450 in the interior of the republic. These rates are not in line with the formulae established in decree-law 61 of February 17, 1955. This law provided that fees would range from 135 to 200% of a daily legal minimum wage. Minimum wages are currently ₲365 in the interior and ₲390 in the capital city, and therefore the exemption fees equal only between 62% to 86% of the applicable fees established by the law. We believe that a study should be made to determine the level to which fees may be raised without inducing people to work rather than paying the fees.

Exemptions (Art. 6)

The exemption clause is a source for abuses because of vague description of certain categories; for instance "(i) employees of the post offices and public utilities." We heard of cases in which such exemptions were granted as political favors rather than for the reasons provided in the law. This could eventually be avoided or at least reduced to a great extent by delegating authority for exemptions only to the Regional Committees.

Organization of the General Directorate (Art. 7)

This article does not detail the proposed organization of the General Directorate (GD) but subjects it to the General Budget.

In this connection it can be stated that the GD does not have, in our opinion, the staff it needs to successfully accomplish its mission. In fact, we were told that rather frequently the four top echelon personnel make official trips to the country leaving the office virtually deserted. Although STATE 014576 does not encourage strengthening of the GD, the latter must be equipped adequately to do its job. For that purpose it would need a reinforcement at least in the accounting line. Since the GD has the authority to appoint its own personnel this could be done simply by including the required number of positions in the new budget.

Functions of the General Directorate (Art. 8)

This article spells out a whole catalogue of different functions entrusted to the GD. We noted during our review that some very important functions are only partially carried out or not performed at all.

For instance, paragraph b) mentions the supervision of all the Road Committees in the country. While in some cases the GD has resorted to this proviso to justify the release of certain Local Committees from their respective regions, in others it has slackened its supervision to the degree of becoming nonexistent, as in the case of the Regional Committee of the Capital (RCC). We believe that by doing this the GD has decisively contributed to the administrative confusion now existing in the system. Undoubtedly political influences play an important role in all this and lead to the absurd situation that the GD does not dare to question non-compliance with the established rules for remittances of funds by the committees on different levels because the latter might be backed by some influential individual. However, if the system is ever supposed to work it will be mandatory to firmly establish the lines of command within the organization.

Article 8 authorizes the GD in paragraph a) to approve, modify, or reject the plans and budgets submitted by the Committee of the Capital and the Regional Committees. While the Committee of the Capital prepares an annual budget, the Regional Committees do not and we were informed that the GD never requested them to do so. Since the project will place more weight on the Regional Committees, it will be extremely important that they become used to the preparation and execution of a meaningful budget. This is a point where Technical Assistance can be very helpful. We visualize that the Municipal Development Institute could play an important role in the training of comittee personnel. Careful budgeting would undoubtedly help to improve the present chaotic financial situation of some of the committees. Revenues and expenses could be redistributed at the regional level to help the poorer communities which otherwise would never be able to defray the cost of road building although they are the ones that need roads most.

Another paragraph of Article 8, the one identified as g), is somewhat confusing. It states that the GD shall authorize the expenditures incurred by the Regional and Local Committees in accordance with their budget. However, the Local Committees are not obliged to submit their budgets.- if they would prepare them - to the GD but only to their respective Regional Committees. Thus we believe it would be better to leave this proviso dormant as it is.

A very important provision of Article 8 has never been implemented. This is the preparation of a General Census of all the conscripts in the country (paragraph d).

The law provides for the preparation by the GD of a general census of all the conscripts subject to the road committee system based on information provided by the committees on the different levels. This was apparently never intended. Years ago, the GD provided the committees with special forms that could have served as a basis for the census and at present it issues so-called "Planillas de Empadronamiento" but these forms are used only to record the cards issued. In other words, the "census" actually taken comprises only those citizens who approach the committees for payment of the exemption fee or for the purpose of rendering their services. The registration of all male citizens between 20 and 50 years of age is of course difficult, because there will always be some evasion, but it is not impossible. The electoral poll which is computerized could serve as a basis for the census provided by the law. It is feasible to program the computer in a way to eliminate females and persons over 50 years old. This would leave out only the foreigners who do not vote but are subject to the road conscription system. We believe that the census once it has been prepared will help to diminish evasion. It would have to be updated periodically, a job that could be supervised by the Regional Committees.

Road Committee of the Capital (Art. 9 and 10)

The Regional Committee of the Capital (RCC) is very much an organization sui generis which has apparently developed somewhat beyond the limits of the law. Thus some of its functions have outgrown the original purposes set 27 years ago.

The RCC consists of 5 members and two alternates in accordance with Art. 9. We saw documentary evidence indicating that the committee meets regularly and takes an active part in management.

The jurisdiction of the RCC covers not only the city of Asunción but also the Central Department and certain localities of adjoining departments in line with the jurisdiction of the Capital Police Department. Thus the RCC comprises about 30% of the total population of Paraguay.

The RCC maintains a complete card file of all the conscripts in the area who have made payments with records of payments made. However, this does not constitute the census mentioned in the law (para b).

While the law requires that the RCC present its budget to the GD for approval, the RCC submits its budget directly to the Minister of Public Works and the Ministry of Finance. In fact, the RCC is then included in the National Budget. This is advantageous for a better control of application of funds because monies expended through the National Budget are subject to strict budgetary controls. (It might be kept in mind that the regional budgets could be treated in the same

manner. The preparation of these budgets should, of course, be carefully watched to avoid misallocation.) For instance, in 1976 the RCC employed 41% of its resources in maintaining a payroll of 38 technical and administrative personnel. The President of the Committee draws a salary as Executive Director, although this appears to be in violation of art. 15 of the law.

The supervision of the local committees pertaining to its district is exercised by the RCC with energy. The RCC employs four inspectors who visit the LRCs, make cash counts and withdraw the funds due the RCC. If a local committee falls too much behind in its obligations the RCC might substitute one of its employees for the committee president. This employee acts as a receiver until the committee is up to date again.

The RCC owns also its own road building machinery and acts in absolute independence from the GD which reportedly does not dare to intervene at all.

We believe that such a privileged situation of one Regional Committee is detrimental to the system and may become pernicious for the project. Although the law singles out the Capital Region the latter is not granted special prerogatives. It is distinguished from the other regions only by the fact that the committee has five members instead of three, and that the Mayor of Asunción has the say on certain actions such as the right to propose the Committee President to the Executive Power for appointment, and the authorizations for shifts in budget items over $10,000.

The existence of such a state within the state will become a constant source for complaints from the other less privileged regions, and we believe it should be made a condition precedent that the status of the Capital Region be reduced to that established by law, or else it should be excluded from the project area.

Regional Road Committees (Art. 11 and 12)

The functions which are assigned to the Regional Committee are generally parallel to the ones of the General Directorate.

The law assigns them the supervision of the Local Committees located within the jurisdiction of the respective Department. This principle would preclude the GD from emancipating certain Local Committees, as it has done in the past to the detriment of the whole organization. We can only insist in recommending that this article be enforced.

Paragraph b) of Art. 12 assigns the Regional Committees the right to contract with the administrative and technical personnel needed for the supervision and execution of road work in their jurisdiction. This

provision should be upheld. It would have been put in practice by some regions, had the law also provided sufficient income for the Regional Committees. This was not done, unfortunately. We will discuss this problem later under Art. 24.

The remaining paragraphs authorize the Regional Committees to obtain the GD's approval for road constructions and their respective cost computations, to authorize expenditures within the approved budget by the Regional and the depending Local Committees and to proceed to the shifting of funds between budget line items up to the amount of ₲10,000. Changes in excess of this amount require the approval of the GD; however, the ₲10,000 level should be updated. The law also authorizes the Regions to hire and fire personnel employed by themselves and the local committees.

The law infers but does not specifically provide for a Regional Committee to be located only in a Department Capital. We visualize the possibility that Regional Committees may be created in addition to the ones already existing in the capital cities of the different departments, also in those locations which have become important during the last decades. A case in point would be the situation of Caaguazú which administratively depends on Coronel Oviedo but has become the center of a large hinterland which is fast progressing. In practice the GD has recognized this situation by permitting Caaguazú to use the de facto status of an exempt Local Committee, which is inconvenient for organizational reasons.

We believe it would contribute to the success of the project if such additional Regional Committees could be established in like situations.

Local Road Committees (Art. 13 and 14)

The functions of the Local Committees comprise submission of the annual budget, proposal of needed road work, proposal for appointments or dismissals of their own employees all to be submitted for approval to the corresponding Regional Committee. They also may perform construction and maintenance of roads in accordance with orders received from higher authority and draw against the funds deposited with the local municipalities. This latter provision is not in force because the municipalities do not collect the conscription fees. (This is discussed more in detail under Art. 23).

Paragraph h) of art. 14 authorizes the local committees to issue the conscription card. This provision could be retained with regard to the actual issuance of the card itself; but collection of funds should be performed by the municipalities and exemption or annotation of work performed should be done by higher authority. Too many abuses are being reported in the different local units.

Operations of and Regulations for the Committees (Art. 15 through 22)

These articles prescribe the functioning of the committees, weekly sessions, vacancies, records of minutes, etc. We noted that, in general, the committees are actually one man operations; i.e. the committee members have all been appointed but their participation is negligible, except in the few cases where committee members participate regularly in the decision making process. In all other committees it is generally the president or sometimes even the secretary who runs the office and exercises most of the functions of the committee.

Due to the greater importance the Regional Committees are going to have in the project, it might be advisable that regular working of these committees be insisted upon. For this purpose it would be useful if the Executive Power would issue the regulations mentioned in Art. 22 and which should govern the operations of the road committees but which have never been enacted as far as we know.

Collection of Fees through the Municipalities (Art. 23)

The law provides that the municipalities are to collect the exemption fees, and sets up a complete procedure for the subsequent transfer of the funds (Art. 25, 26 and 27) and the books which have to be kept. This procedure has never been enforced and we could not obtain a satisfactory explanation why this did not happen. The municipalities have an effective albeit not perfect organization experienced in collection and handling of funds. Many abuses that reportedly occur now could be avoided by making the municipalities responsible for collection and releasing of funds in accordance with established budgets, as the law provides.

This article also establishes the percentage of fines to be collected in case of delinquency of individual conscripts. With the exception of the Committee of the Capital we did not find a committee which actually collects these fines. Also, the fact that an individual can pay his fee at any committee, not only the one of his residence, permits evasion of payment The individual can always allege that he lost his previous card, which would eventually reveal his delinquency of previous years. Therefore, we believe that it should be made a point that fees can be paid only in those committee where the individual is registered. If one moves from one jurisdiction to another it would be mandatory to register at the new residence, just as in the case of military papers or electoral records.

Distribution of Fees Collected (Art. 24)

The original law provided that 80% of the fees collected would remain available for expenditures of the Local Committee which had levied the fees. This was based on the then prevailing method of repairing roads or opening ox-cart trails across the woods which was entirely done by hand. When the

need for machinery was felt these percentages were altered and 50% of the total collection was deviated to the Ministry of Public Works for the purchase of road building machines. These funds were sent to the GD and deposited with Treasury. In the case of the Capital Region which purchases its own machinery the percentage contributed to the common fund is only 10%. This practice is, however, not based on law but on a ministerial decision dated December 22, 1966.

The above percentages are theoretical and we have seen several cases where committees retained more than the prescribed share for their own expenses. They invariably claimed that the GD had approved these alterations but we could not obtain written evidence. On the other hand, the GD complained that they were not receiving what they were supposed to. They even related to us a case where a region (outside the project area) did not send anything to the central authority. The GD claims that it is not in a position of enforcing the rules.

We believe that one of the conditions precedent to the implementation of the new project should be a complete reform of the shares of the different committees. If the Regional Committee effectively performs all its duties and responsibilities, there is no doubt that a mere 10% of the total collected, as at present, is not enough. The law establishes that the funds shall be employed in the department where they were collected; it does not have to be the local jurisdiction. In our opinion, this would enable the Government to have the funds split only between regions and Treasury. Each region would administer the funds in accordance with its budget and transfer the amounts necessary for administration and any specific work to the local committees concerned.

Transfer of and Accounting for Funds (Art. 25 through 27 and 35)

The law provides specific instructions for the transfer of funds from the lower levels to the Treasury, and the other beneficiaries. This system is not followed. We have tried to trace several remittances from the local level through to the Treasury. This was not possible in all cases. There were even instances where receipts issued by regions and found in local committees had not been recorded at the regional level.

This is, of course, due mainly to the fact that there is no effective accounting on site and no reconciliation of annual reports with actual remittances received at the higher levels. We also learned that a former inspector of the GD had been travelling to several local committees where he collected funds and issued receipts on official forms. He never turned these funds in to the GD, yet the GD has not accounted for this loss.

None of the committees in the areas we visited, except those of the Capital district, maintain a minimum set of books not to speak of the rubricated books required by law. The most elemental features of good business practices such as prenumbered receipts are ignored even by the GD,

We suggest that the provisions of law for correct accounting be enforced before the project can be implemented.

The Conscription Card (Art. 28 and 29)

The law provides for a booklet containing enough space for 10 years of service or payments. This booklet is to be given free of charge to the individual (Art. 30). The GD is supposed to have the cards printed with funds provided in its budget (Art. 29). The actual fact is that the card now in use is just that: a card for one year, it is sold to the individual for from 10 to 50 ₡ each, and it is printed by the GD or the Committees which pay for it from their own funds.

We believe it is imperative that the provisions of the law be followed. The GD should print the booklets and pass them to the committees free of charge so that they can turn them over to the individuals at the same term.

Whether the prescribed booklets or the presently used one-year cards are to be institutionalized is a matter of preference. We believe that there are valid arguments for both types. At any rate, the cards should be prenumbered to facilitate a control of the quantities issued.

Although the municipalities are to collect the exemption fees, the committees are charged with the issuance of the cards and the annotation of fees paid or days worked. The latter item is the one where most of the abuses are committed, e.g. a card is issued for work performed but instead an amount less than the exemption fee is paid under the table, or a card is issued for work without actual work done as a political favor. This cannot be avoided unless the issuance of the cards is also turned over to the municipalities or the concept of labor is entirely omitted and all the conscripts have to pay the exemption fee. Whether this change can be performed by a regulation of the law or another decree, remains to be seen, but it seems worthwhile that this possibility be explored.

Enforcement Provisions (Art. 32 through 34)

The law establishes that individuals delinquent in the compliance with the road conscription cannot occupy public or private positions, nor exercise professions, commerce or industry. No one may employ a delinquent individual, and no notary public or justice of the peace may issue deeds, writs or any other legal proceeding unless the parties have produced their conscription cards.

As happens with many old laws this proviso is not being enforced. At some regions inspectors visit large business firms and control the compliance with the law. At the local level this is not done because the local presidents are all old-time residents and want to avoid having troubles with their neighbors.

Some regions establish road blocks where inspectors require travellers to produce their conscription cards. If the cards cannot be produced the inspector issues a new one on the spot and collects from the traveller. This system is open to abuses and, in fact, many abuses have been reported to us. Since it results in deviating revenues from the regions to which they belong this practice could even be construed as being illegal in the light of article 24.

The regions of Caacupé and Paraguarí do not have inspectors at present. They entirely rely on the local committees to send in their shares. In Villarrica and Coronel Oviedo, as well as the Capital, inspectors are employed who among other things go out to the local committees make cash counts and withdraw available cash. This practice is dangerous in our opinion, and in fact in one region we found several receipts signed by the inspector in the local committees but which had not been entered in the records of the region. We believe the inspectors should never be allowed to withdraw cash.

In our opinion, each RRC should hire its own inspectors who will be in charge of performing periodical inspection of people working in commercial firms, government offices, etc. to insure compliance with the law. Likewise they may visit bus terminals, and other places of public gathering to identify individuals who are delinquent in matters of road conscription.

Financial Aspects

In most of the Local Committees regular bookkeeping is non-existent. In the Regions the situation is better but remains far from being satisfactory. The General Directorate apparently only accounts for the funds received through the official bank account but does not attempt to reconcile these data with the information supplied by the Regions through their annual report. We have tabulated the information gathered at different sources and found that ₲529,900 reportedly collected by the Regions and transmitted to the GD have not been accounted for by the latter. (Exhibit A). Under the circumstances, and because complete records are not available at any of the three different levels, we had to refrain from attempting to reconcile the figures as presented. With this reservation, we would like to discuss the financial situation of the future project with regard to income from the road conscription system.

Based on projections from figures contained in the 1972 Population and Household Census and the conclusion in LADA's report that about 41% of the constitutency actually pay the exemption fee, we found that in the project area an approximate ₲49.5 million should have been raised in 1976. Figures reported by the Regional Committees indicate, however, that only ₲33.6 million were collected. This suggests the following extreme conclusions: (a) LADA's 41% result of inquiries made among the

project area residents is erroneous and only 27.88% of all the conscripts pay the fee, while 72.12% either prefer to work or evade their obligation; or (b) an amount of up to ₲16 million collections has not been reported.

We expect the truth to be halfway between both extremes. In consequence we can assume that the project area will have an approximate annual income of about ₲41 million, always provided that collection procedures are essentially improved.

Exhibit B shows that this is important. In the Capital where collection is pursued more vigorously than in the interior of the country actual collections are not very far from expected collections.

In the City of Asunción the conscript has no choice of paying or working. He has to pay in any case. This is not based on law nor other governmental acts; it is of course based mainly on the impossibility of making the Asunción residents work and, secondly, it is more convenient to pay instead of losing 4 - 6 days of wages. The latter argument also holds true in the interior of the country and we believe a more intensive drive in collection of fees should considerably improve the total revenues.

Attachments: Exhibits A and B

Reviewed by:Actg.CDO:MHHirsh:ima
March 4, 1977

CUADRO SINTETICO DEL CUMPLIMIENTO DEL SERVICIO DE CONSCRIPCION VIAL DURANTE EL AÑO 1.975.- CON LOS DATOS PROPORCIONADOS POR LAS JUNTAS VIALES REGIONALES Y LAS LOCALES ORGANIZADAS POR ESTAS REGIONALES.-

Año 1975.-	Juntas Organizadas	Pagaron su Tributo.-	Exonerados.-	Trabajon	Total de Conscriptos	Observacion
Junta Vial de la Capital	1.-	26.140.-	2.545.-	-	28.683.-	
Juntas Locales de La Capital	41.-	17.[illegible]0.-	1.503.-	4.325.-	23.058.-	
J.V.R. Concepcion	6.-	2.160.-	256.-	2.444.-	4.860.-	
J.V.R. Villa San Pedro	20.-	4.715.-	428.-	2.620.-	7.763.-	
J.V.R. Cordillera Caacupé	13.-	3.429.-	416.-	4.878.-	8.723.-	
J.V.R. Caaguazú C.Oviedo	14.-	3.118.-	319.-	1.743.-	5.180.-	
J.V.R. Guairá Villarrica	17.-	4.197.-	388.-	2.170.-	6.755.-	
J.V.R. Caazapá	12.-	1.658.-	239.-	2.069.-	3.966.-	
J.V.R. Encarnación	20.-	5.288.-	608.-	2.895.-	8.791.-	
J.V.R. San Bta.Mis	10.-	1.659.-	159.-	1.431.-	3.249.-	
J.V.R. Ciudad de Pilar	15.-	2.957.-	261.-	1.032.-	4.250.-	
J.V.R. Pto.Pte.Stroessner	12.-	1.143.-	147.-	2.053.-	3.343.-	
J.V.R. Paraguarí	15.-	3.552.-	627.-	6.568.-	10.747.-	
J.V.R. Pedro J.Caballero	6.-	1.972.-	1101-	690.-	2.762.-	
J.V.R. Fte. Olimpo	5.-	1.454.-	119.-	491.-	2.064.-	
	207.-	80.672.-	8.125.-	35.399.-	124. 196.-	

Asunción, Diciembre de 1.975.-

CUADRO SINTETICO DEL CUMPLIMIENTO DEL SERVICIO DE CONSCRIPCION VIAL EN EL AÑO 1.976.- DE ACUERDO A LOS DATOS PROPORCIONADOS POR LAS JUNTAS VIALES LOCALES Y REGIONALES ORGANIZADAS.-

	Juntas Organizadas	Pagaron Tributo	Exonerados Art. 6º	Trabajaron Art. 4º	Totales Empadronados	PARTICIPANTS (-EXEMPTS)
J.V.R. Concepción	6.-	1.963.-	256.-	2.199.-	4.418.-	
J.V.R. Villa San Pedro	20.-	6.062.-	621.-	4.236.-	10.919.-	
J.V.R. Cordillera "Caazupá"	13.-	3.350.- 43%	413.- 5%	4.385.- 57%	8.148.-	7735
J.V.R. Villarrica "Guairá"	20.-	4.645.- 57%	691.- 8%	3.496.- 43%	8.832.-	8141
J.V.R. Coronel Oviedo "Caaguazú"	16.-	4.617.- 67%	344.- 5%	2.258.- 33%	7.219.-	6875
J.V.R. Caazapá	11.-	2.000.-	238.-	2.235.-	4.473.-	
J.V.R. Encarnación "Itapua"	30.-	5.707.-	660.-	2.999.-	9.366.-	
J.V.R. San Juan Bta. Misiones	10.-	2.297.-	155.-	1.584.-	4.036.-	
J.V.R. Paraguarí	14.-	5.829.- 53%	630.- 5%	5.205.- 47%	11.664.-	11,034
J.V.R. Pto. Pte. Stroessner	13.-	3.712.-	239.-	2.402.-	6.353.-	
J.V.R. Pilar "Ñeembucú"	15.-	3.462.-	317.-	1.292.-	5.071.-	
J.V.R. Pedro J. Caballero "Amambai"	6.-	2.277.-	119.-	967.-	3.363.-	
J.V.R. Puerto Olimpo "Alto Paraguay"	5.-	1.861.-	199.-	931.-	2.991.-	
J.V.R. Junta Vial Capital	1.-	28.290.-	....-	....-	28.290.-	
J.V.L. Juntas Locales Capital "Central"	41.-	18.596.-	1.404.-	4.279.-	24.279.-	
T O T A L E S.	221.-	94.668.-	6.226.-	38.468.-	139.422.-	

Asunción, Enero 21 de 1.976.

EXHIBIT A

GDRC INCOME FROM CONSCRIPTION FEES IN PROJECT AREA 1975/6
(s per unaudited records of GDRC and Regional Committees)

Area	1975 Per GDRC	1975 Per Region	1975 Difference	1976 Per GDRC	1976 Per Region	1976 Difference
Capital	1,522,881	1,760,065	- 237,184	1,948,085	2,401,759	- 453,674
Caacupé	66,725	(1)	-	393,465	543,429	- 149,964
Coronel Oviedo	1,062,120	1,478,150	- 416,030	2,662,385	2,611,250	51,135
Paraguarí	380,367	355,792	24,575	1,077,210	1,118,945	- 41,735
Villarrica	268,099	264,980	3,119	606,682	541,435	65,247
	3,300,192	-		6,687,827	7,216,818	- 528,991

(1) No records available at region for 1975.-

EXHIBIT B

PROJECTED COLLECTIONS 1976 (000 ₲)

Age Group	Area	Male Population (3)	Fee	Projected Collection (000 ₲)
20 - 30	Capital (1)	65,610	550	36,085
	Interior (2)	68,890	450	31,000
31 - 40	Capital	35,832	500	17,916
	Interior	37,623	400	15,049
41- 50	Capital	25,248	450	11,362
	Interior	26,510	350	9,279
		259,713		120,691

(1) Asunción, the Central Department and selected locations of adjoining departments.
(2) Interior: Departments of Caacupé, Coronel Oviedo, Paraguarí, and Villarrica
(3) Projected from 1972 Census.

PROJECTED, EXPECTED (4) AND ACTUAL COLLECTIONS 1976

Area	Projected	Expected	Actual (5)	Actual Collections in % of Projected C.	Actual Collections in % of Expected C.
Capital	65,363	26,799	24,018	36.7	89.6
Interior	55,328	22,684	9,630	17.4	42.5
	120,691	49,483	33,648	27.9	68.0

(4) Inquiries conducted by LADA revealed that 41% of conscripts would pay fees.
(5) As per Regions' records.

ANNEX VII

Initial Environmental Examination

Project Location: Paraguay

Project Title: Rural Roads Loan

Funding: FY 78 $5.2 million

Life of Project: 4 years

IEE Prepared by: Weyburn D. Davies
SER/ENGR/E&S, AID/W.

Date December 13, 1977

Environmental Action Recommended:

It is recommended that a negative determination be made for this project. Based on careful observation and analysis of conditions the proposed action will have no significant detrimental effects on the physical or socio-cultural environment, and is, therefore, an action for which neither an environmental assessment (EA) nor an environmental impact statement (EIS) as defined in AID regulation 16, will be required.

Concurrence: _____ Date Jan. 4, 1978
Mission Director, USAID/Paraguay

Assistant Administrators Decision:

202

I. EXAMINATION OF THE NATURE, SCOPE AND MAGNITUDE OF ENVIRONMENTAL IMPACTS

DESCRIPTION OF THE PROJECT

A. General: The project has the development goal of increasing the income of small farmers in Paraguay. The purposes of the project are twofold:(1) to improve farm to market roads in selected minifundia areas; and (2) to improve the capability of Paraguayan institutions to construct, improve, and maintain rural roads. Road improvements will be made where they can be shown to contribute to the development goal of increasing small farmer income and, hence, well-being through providing better and less expensive access to markets and the benefits of existing social services.

The project will be carried out in the minifundista areas (areas of small, multi-cropped farms) in the departments of Cordillera, Paraguarí, Guairá and Caaguazú, all located to the southeast of the capital city of Asunción.

It is estimated that the project will construct or improve 1400 kilometers of rural roads in the project area over the four year operating life of the project. Primary emphasis will be on improving existing roads by removing bottlenecks such as areas subject to flooding or erosion through the construction of bridges and/or culverts, and making necessary cuts and fills, etc. The widening and reshaping of existing cart tracks and cart trails which extend off the main rural

routes for several kilometers is also included. Very little new road construction is contemplated and then only for realignment and for bypassing certain bottleneck areas.

Training of Paraguayan nationals for staffing key positions in the Department Regional Road Committees (RRC) is also programmed.

The bulk of the funds for this project will be used to purchase the necessary machinery (graders, bulldozers, trucks, etc.), supporting and maintenance equipment and hand tools to make the project a viable mix of machine and labor intensive construction and maintenance.

B. Geography, Geology and Topography of the Project Area: The project area is generally one of gently rolling terrain interspersed with small but relatively rugged hills. There are some relatively flat areas along valley floors. Slopes in the hilly areas are relatively steep in places and farming is done on hillside or hilltop natural benches. Little or no terracing is evident; however, contour planting is used for row-crops where any degree of slope is encountered.

Outcroppings of soft sandstone are the prevalent rock formations and these are limited to the hill areas.

Soils generally vary from sandy to sandy-loam in nature with some heavy clay areas in the lower valley floors.

C. Habitation Patterns: Farms in the project area vary in size from one to twenty (1-20) hectares in area with about 50% ranging from 1 to 5 hectares, 19-20% in the 5-10 hectare

range, about 15 to 19% in the 10-21 hectare range, and 8-10% in excess of 21 hectares. These farms face along either the existing main rural roads or the short, deadend feeder side cart trails. Almost every farm has a farmstead consisting of a house and one or more small out-buildings for animal housing or crop storage. In some cases (generally on farms over 5 hectares in size) a small agribusiness is connected to or is a part of the farmstead. The main rural roads connect small villages of from 50 to several hundred population which are located from 5 to 20 or more kilometers apart and serve as marketing centers as well as the location of schools and health clinics.

Generally, except for the villages, the rural population is scattered along the rural road system and not clustered as is the case in many LDC's.

D. Governmental Implications: This project, which is designed as an optimal mix of machine and labor-intensive construction and maintenance activity, is ideally suited to the governmental organizational structure for rural road construction and maintenance which exists in Paraguay. This is based on a conscription law which requires every able-bodied male between ages twenty and fifty to work a fixed number of days per year (maximum 6) on rural roads or make a cash payment based on current wages in lieu of labor. Organizationally the system is very loosely administered by the General Directorate of Roads Committees (GDRC) at the National

205

(Ministry) level, through Regional Roads Committees (RRCs) at the Department level, and then through voluntary Local Roads Committees (LRCs) at the operating level. Members of both the LRCs and the RRCs are locally selected or appointed and hence exemplify a high degree of local participation.

IDENTIFICATION AND EVALUATION OF ENVIRONMENTAL IMPACTS

Note: In surveying the real and/or potential impacts of this project, both beneficial and detrimental impacts were taken into consideration. These are indicated on the Impact Identification and Evaluation form (attached) with either a plus or a minus sign.

A. Land Use: In general, little change in land use patterns will occur as a result of this project. What may change somewhat is the amount of land under cultivation. If the project succeeds in improving farm to market transportation and hence in the raising of prices to farmers for marketable crops, some land which is presently not cultivated may be added. These lands are presently uncleared or used primarily for pasturage. Due to other constraints (e.g., labor shortages), however, the amount of new lands put under cultivation will still be limited.

1. Changing the character of the land through:

a. Increasing the population - This is not expected since the population in the project area has been slowly decreasing for some time. Outmigration has historically characterized the project area due to low incomes on farms and job opportunities in nearby Brazil and Argentina.

This, coupled with the opening of new lands for settlement along the eastern borders with Brazil and in the northern (Chaco) regions has been the basic reason for population loss in the project area. It is expected that in the long term the project activity may help to stabilize populations through providing better income and access to social benefits such as schools and health facilities.

b. Extracting natural resources - This would be limited to more intensive land cultivation methods and subsequent soil nutrient depletion. Very intensive methods will require fertilizers to overcome this. Wood-cutting on hill forests may increase slightly, but since these forests are all second growth timber, there are no commercial grade tree stands in the project area and wood cutting is limited to that used directly for fuel and charcoal.

c. Land clearing - The only land clearing which will result from the project will be that required for road-bed widening and necessary rights-of-way. Rights-of-way of 20 meters are contemplated and in most cases exist on all roads in the project area with the possible exception of the small feeder cart tracks. Total right-of-way hectarage for all 1400 kilometers considered for improvement amounts to only 2,800 hectares of which less than 800 is estimated to be required for any necessary widening operations.

20

2. Altering natural defenses: No foreseeable consequences.

3. Foreclosing important uses: No foreseeable consequences.

4. Jeoparadizing man or his works: No foreseeable consequences.

5. Other factors concerning land use: There do not appear to be any other known factors which would effect land use with one large exception: That exception is erosion and erosion control. As planned, the project proposes to reshape and where necessary, reroute roads to obtain a best possible condition concerning slopes, curve radii, etc. These improvements will tend to mitigate or eliminate conditions in the present road system which lead to extreme erosion problems in many areas. Along with proper slopes and shaping, water velocity control devises such as rip-rapping and sodding are specified for drainage ditches where slopes are great enough to permit scouring velocities of run-off. This aspect of the project has the decided secondary benefit of providing a controlled drainage system, not only for road rights-of-way, but for surrounding farm lands.

Water Quality:

1. The physical state of water will be little changed but there will be some extra burden of silt, at least for a period immediately after construction and repair of road sections due primarily to the removal of plant cover in widening and rerouting operations. This effect would only be temporary, however, since natural vegetation would soon recover in the

denuded areas (with the exception of actual road-bed). This also would be somewhat balanced out by the controlled run-off structures to be included (see 1.,d., "erosion control," above) in the engineering specifications.

2. No other significant changes in water quality can be ascertained.

C. Atmospheric:

1. Air additives: There will be some increase in dust generation during construction and maintenance operations but this will be minimal and of short duration. Dust generation will be minimal at all times since the soils are generally quite sandy and little dust is generated when they are disturbed. Increased traffic expected as a result of road improvements should, therefore, create little increase in dust production.

2. Air pollution: It will only slightly increase due to increased traffic. Most larger trucks are diesel powered and this will also lead to some minimal increase in smoke production. The relatively pristine quality of the air in the rural areas and the prevailing winds and frequent showers, especially in the growing (and marketing) season should provide for sufficient dilution and wash-out so as to make any increases almost undetectable.

3. Noise pollution: Again, minimal and would be due solely to the passage of heavy trucks during crop marketing times only. Otherwise there should be little measurable increase from present levels.

209

D. Natural Resources:

1. There will be no altered use of water as a result of the project activities.

2. There are no irreversible, irrecoverable or inefficient committments of natural resources contemplated in the project.

E. Cultural:

1. Altering physical symbols: Since roads within the project will almost always follow existing rights-of-way and commonly traveled routes, there will be no disturbance of cemeteries, shrines, churches or other cultural sites entailed in the project. Where diversions of short stretches of road are contemplated, project managers will ascertain that no such symbols will be disturbed.

2. Dilution of cultural tradition: Since the Paraguayan rural culture is highly oriented on extended family lines, there should be little or no dilution of this tradition. A possible secondary benefit may be the strengthening of this tradition by making out-migration from the area comparatively less desirable.

3. Changes in family structure: See item 2., above.

F. Socioeconomic:

1. Changes in economic/employment patterns: One of the primary benefits expected of the project is that there will be an increase in disposable farm income due to a large number of possible factors including a decrease in transportation costs and an increase in time savings.

No change in types of employment within the area is anticipated but it is expected that on-farm employment may rise in numbers due to the diminuation of out-migration and the potential increase in land put under cultivation.

2. Changes in cultural patterns: Change in cultural patterns which have been developing in recent years with the out-migration of young people seeking greater opportunity in the more populous areas should slow down with the result of stabilizing population shifts and fortifying the traditional extended family system.

3. Changes in population patterns: Changes in transport availability may lead to some development of cross-roads marketing and pick-up points as well as concommitant development of small agri-businesses and service businesses (coffee-houses, etc.). This should be minimal at most and represents neither a positive nor negative significant impact on the environment.

G. Health:

1. Changing a natural environment: No significant impacts are expected.

2. Eliminating an ecosystem element: No natural ecosystem elements will be eliminated and very little disturbance will be created by the removal of cover plants along rights-of-way.

3. Other: Changing an existing man-made environment - Malaria appears to be the only water related disease in Paraguay which can be connected with the project activity

of upgrading and constructing rural roads. The project should have little effect on the incidence of this disease and effects of any magnitude must be positive. Improved ditching and run-off structures (culverts, bridges, etc.) should eliminate most of the pooling of water in rights-of-way and adjacent lands which now exist. These presently serve as temporary mosquito breeding areas and may contribute to the incidence of the disease. Additionally, improved roads will allow for better scheduling of spray crews and surveillance personnel for both case detection and distribution of anti-malarial drugs.

Borrow areas for material to be used for raising road elevations and for stabilizing soils will be so used to prevent pooling or ponding of waters in them. Most required borrow material will be obtained from the drainage ditches as they are shaped by construction/maintenance activity.

Other health conditions should be improved or have the opportunity to be improved with improved ingress and egress of the rural community. Health stations and other such health care facilities will become more accessible to the rural population through improved roads with the concommitant increase of traffic. The rural population will become more accessible to specialized health teams (i.e.: malaria spray teams) and their services.

H. General:

1. There are no international environmental impacts foreseen.

2. There are no impacts of a controversial nature foreseen.

3. There are no larger program impacts of a detrimental nature foreseen.

4. Other factors: According to available data and knowledge, there are no known endangered species of either flora or fauna presently native to the project area. In any event, the government of Paraguay has recently banned all big-game hunting in the country and, if it were necessary, the project activity could only assist in the enforcement of such a ban in the project area and any subsequent projects of a similar nature.

I. Other Possible Impacts:

None are foreseen.

Note: All statistical data as to farm size, distribution, etc. given in this report was taken from the publication, Small Farm Sub-Sector Assessment & Constraints Analysis assembed and published by USAID/Paraguay, August 1976.

II. RECOMMENDATION FOR ENVIRONMENTAL ACTION

Data search, interviews and field observation indicate that little or no significant detrimental environmental impact will result from this project and that measurable significant beneficial impacts will be forthcoming.

Therefore, it is recommended that no Environmental Assessment (EA) or Environmental Impact Statement (EIS) will be required. Further it is recommended that a negative determination be made.

213

IMPACT IDENTIFICATION AND EVALUATION FORM

Impact Areas and Sub-areas 1/	Impact Identification and Evaluation 2/
A. LAND USE	
1. Changing the character of the land through:	
a. Increasing the population	L +
b. Extracting natural resources	L +
c. Land clearing	L -
d. Changing soil character	N
2. Altering natural defenses	N
3. Foreclosing important uses	N
4. Jeopardizing man or his works	N
5. Other factors	
Erosion of land	H +
B. WATER QUALITY	
1. Physical state of water	L -
2. Chemical and biological states	N
3. Ecological balance	N
4. Other factors	

1/ See Explanatory Notes for this form.

2/ Use the following symbols:
N - No environmental impact
L - Little environmental impact
M - Moderate environmental impact
H - High environmental impact
U - Unknown environmental impact

C. ATMOSPHERIC

1. Air additives ———— L -
2. Air pollution ———— L -
3. Noise pollution ———— L -
4. Other factors

D. NATURAL RESOURCES

1. Diversion, altered use of water ———— N
2. Irreversible, inefficient commitments ———— N
3. Other factors

E. CULTURAL

1. Altering physical symbols ———— N
2. Dilution of cultural traditions ———— N
3. Other factors

Changes in family structure ———— L +

F. SOCIOECONOMIC

1. Changes in economic/employment patterns ———— M +
2. Changes in population ———— L +
3. Changes in cultural patterns ———— L +
4. Other factors

Changes in population patterns ———— L

G. HEALTH

1. Changing a natural environment ———— N
2. Eliminating an ecosystem element ———— N
3. Other factors

Changing an existing man-made environment ———— M +

———— ————

H. GENERAL

1. International impacts ———— N
2. Controversial impacts ———— N
3. Larger program impacts ———— N
4. Other factors

Endangered species ———— N

———— ————

I. OTHER POSSIBLE IMPACTS (not listed above)

———— ————

———— ————

———— ————

Note: Impact ratings have been given a (+) or (-) value depending on the rater's knowledge of whether the impact will generally be of a beneficial (+) or detrimental (-) nature.

See attached Discussion of Impacts.

219

28

FINANCIAL DETAILS OF PROJECT

AID AND COUNTERPART (GOP & COMMUNITY) PARTICIPATION IN RURAL ROADS PROJECT

AID Loan:

Equipment	$3,934,000
Technical assistance	300,000
Materials	766,000
Institutional Analysis	200,000
	$5,200,000

Counterpart:

GOP/MOPC

Fuel and Lubricants	571,000
Equipment operator's wages	344,000
Equipment maintenance	154,000
Vehicle drivers, support labor	226,000
Materials	646,000
Office equipment	8,000
MOPC support and overhead	476,000
	$2,425,000

Communities

Labor	415,000
Fuel contribution	150,000
Construction materials	150,000
	$ 715,000

TOTAL Project Package

AID Loan	$5,200,000
GOP/MOPC	2,425,000
Communities	715,000
	$8,340,000

GOP/MOPC	29%
Communities	9%
Total Counterpart	38%

FINANCIAL DETAILS

A. AID Loan

A.1 Equipment:

EQUIPMENT PROCUREMENT

SUMMARY

I T E M	Order 1	Order 2
Heavy Equipment	$1,624,000	$781,500
Spare Parts 20%	324,800	156,300
	1,948,800	937,800
Office, field equipment	24,400	-
Hand tools, bolts	30,650	36,450
Subtotal	2,003,850	974,250
Shipping & Ins. 10%	200,385	97,425
	2,204,235	1,071,675
Inflation (15%)	330,635 (30%)	321,502
	$2,534,870	1,393,177
Total Equipment	$3,934,000 (rounded)	

EQUIPMENT PROCUREMENT

HEAVY EQUIPMENT

ITEM	Unit Cost	#	Order 1	#	Order 2
Motorgrader	$55,000	(4)	$220,000	(2)	$110,000
Grader	7,000	(4)	28,000		-0-
Pan scraper	6,000	(8)	48,000		-0-
Farm tractor (80 HP)	13,000	(6)	78,000		-0-
Farm tractor (110 HP)	20,000	(4)	80,000		-0-
Compactor	7,000	(2)	14,000	(2)	14,000
Bulldozer (D6)	85,000	(4)	340,000		-0-
Bulldozer (D7)	115,000		-0-	(2)	230,000
Frontend loader	70,000	(2)	140,000	(2)	140,000
Dump truck (5 m3)	18,000	(8)	144,000	(8)	144,000
Disc	2,500	(4)	10,000		-0-
Pick up (3/4 T)	8,500	(4)	34,000		-0-
Flatbed truck (1 1/2 T)	12,500	(4)	50,000	(1)	12,500
Pick-up double cabin	10,000	(2)	20,000		-
Water truck	30,000	(1)	30,000	(1)	30,000
Mobile crane	40,000	(1)	40,000		-
Mobile shop	50,000	(2)	100,000	(2)	100,000
Grease truck	20,000	(4)	80,000		-
Low boy	30,000	(1)	30,000		-
Pile driver	30,000	(1)	30,000		-
Cement mixer	5,000	(1)	5,000		-

221

Water pump	1,000	(1)	1,000	(1)	1,000
Water pump (pressure)	1,500	(4)	6,000		-
Air compressor	3,000	(4)	12,000		-
Welder	1,000	(4)	4,000		-
Generator	20,000	(4)	80,000		-
Total Heavy Equipment			$1,624,000		$781,500

Office and Field Equip					
Radio set	1,200	(7)	8,400		-
Office equip	1,000	(6)	6,000		-
Surveying equip	5,000	(2)	10,000		-
Total Office & Field Equipment			$24,400		-

EQUIPMENT PROCUREMENT

ITEM	Unit Cost	#	Order 1	#	Order 2
Pick	$4.0	(200)	$800	(400)	$1,600
Shovel	4	(200)	800	(400)	1,600
Wheelbarrow	30	(100)	3,000	(200)	6,000
Machette	4	(300)	1,200	(600)	2,400
Bolts, spikes			15,000		15,000
Carpenter set	200	(5)	1,000	(5)	1,000
Mechanic set	500	(5)	2,500	(5)	2,500
Assorted wrenches	70	(5)	350	(5)	350
Misc. tools			6,000		6,000
Total hand equipment			$30,650		$36,450
Total Equipment			1,648,400		781,500
TOTAL			$1,679,050		$817,950

223

PARAGUAY RURAL ROADS

TENTATIVE EQUIPMENT LIST

Quantity 1o.	Quantity 2o.	Quantity Total	I T E M	Unit Price	TOTAL
			Heavy Equipment **Equipo Pesado**		
✓4	2	6	Motorgrader (CAT 120B equiv.) Motoniveladora (equiv. CAT 120	55,000	330,000
4	-	4	Grader (Melga NAM-30 equiv.) Niveladora (tipo Melga NAM-30)	7,000	28,000
8	-	8	Pan scraper(3 m^3) Pala de arrastre (3 m^3)	6,000	48,000
✓6	-	6	Farm tractor (80 HP) Tractor Agrícola (80 HP)	13,000	78,000
✓4	-	4	Farm tractor, hydraulic pump (110 HP) Tractor agrícola, sist. hidráulico (110 HP)	20,000	80,000
2	2	4	Vibrating Compactor, tractor pulled Compactador vibratorio remolcable	7,000	28.000
✓4	-	4	Bulldozer (CAT D6 equiv.) Topadora (equiv [illegible] D6)	85,000	340,000
✓-	2	2	Bulldozer (CAT D7 eq[illegible] Topadora (equiv. a C[illegible]	115,000	230,000
2	2	4	Frontend loader, rubber tire (CAT 950 equiv.) Pala cargadora sobre neumáticos (equiv. a CAT 950)	70,000	280,000
✓8	8	16	Dump truck (5m^3) Camión volquete (5m^3)	18,000	288,000
4	-	4	Disc, industrial type Rastra de discos	2,500	10,000
				Sub-total	**1,740,000**

124

Quantity 1o.	2o.	Total	ITEM	Unit Price	TOTAL
			Service Vehicles **Vehículos de Servicio**		
4	-	4	Pick-up truck (3/4 T), 4 Wheel drive Camioneta doble tracción (3/4 T).	8,500	34,000
2	-	2	Pick-up Double cabin, 4-wheel drive Camioneta doble tracción (tipo rural)	10.000	20,000
4	1	5	Flatbed truck, Stake sides, (1 1/2 T) Camión plataforma (1 1/2 T)	12,500	62,500
1	1	2	Water truck (5,500 lt.) Camión cisterna p/agua (5,500 lt.)	30,000	60,000
				Sub-total	176,500
			Field support equipment Equipo de apoyo		
1	-	1	Mobile crane (5 t) Grúa (5 t)	40,000	40,000
	2	4	Mobile shop (Van & trailer) Taller móvil	50,000	200,000
	-	4	Lubrication truck, (2 1/2T) Camión de engrase (2 1/2 T)	20,000	80,000
	-	1	Low-boy truck (for 20 T) tractor Camión transportador (para 20 T)	30,000	30,000
	-	1	Pile driver Hinca pilotes	30,000	30,000
	-	2	Cement mixer (0.2 m^3) Hormigonera (0,2 m^3)	5,000	5,000
	1	2	Water pump & hose Bomba centrífuga para agua	1,000	2,000
	-	4	Water pump & hoses for pressure cleaning Instalación hidráulica p/limpieza	1,500	6,000
	-	4	Shop Air-Compressor/attachments Compresor de aire	3,000	12,000

225

Quantity 1o.	2o.	Total	ITEM	Unit Price	TOTAL
			Welding machine/attachments		
4	-	4	Equipo para soldadura	1,000	4,000
			Electric Generators, (75 Kva)		
4	-	4	Generador eléctrico, (75 Kva)	20,000	80,000
				Sub-total	489,000
			Office & Field Support Apoyo para oficina y campo		
			Radio Communication (short wave)		
7	-	7	Radio receptor y transmisor (onda corta)	1,200	8,400
			Engineering office equipment		
6	-	6	Equipo para oficina de ingeniería	1,000	6,000
			Surveying equipment		
2	-	2	Equipo de topografía	5,000	10,000
				Sub-total	24.400
			Hand tools, Bride spikes & bolts & Implements Herramientas, herrajes para puentes, y accesorios		
			Pick		
200	400	600	Pico	4.	2,400
			Shovel		
200	400	600	Pala	4.	,400
			Wheelbarrow		
100	200	300	Carretilla de mano	30	9,000
			Machette		
300	600	900	Machete	4.	3,600
			Bridge bolts, spikes, etc.		
			Herraje para puentes	L.S.	30,000
			Carpenter tool set		
5	5	10	Herramientas de carpintería	200	2,000
			Mechanic tool set		
5	5	10	Herramientas de mecánica	500	5,000
			Assorted Wrench set		
5	5	10	Juego de llaves	70	700
			Miscellaneous extra, tolls & Supplies		
			Gastos extra, herramientas y reposición	L.S.	12,000
Direct value tot...			$2,497,000.-	Sub-total	67,100

A.2	LOAN FUNDED - TECHNICAL ASSISTANCE :	$300,000 (rounded)
1.	Training for heavy equipment operators	$60,000
2.	Observation visits	31,000
3.	Spare parts control consultant	28,000
4.	Equipment procurement specialist $17,500 (nonadd- to be funded from tech support)	
5.	Social Scientist consultant	175,000
6.	Training for education specialist of caminos vecinales	4,000

TECHNICAL ASSISTANCE AND TRAINING

1. Training of operators for major equipment (to be included as part of the bidding proposals for equipment); motor-graders, bulldozers, fronted loaders, dump trucks, graders, farm tractors, pan-type earth movers (3 m^3), other trucks and all support equipment.

   - 0.025 x $2,400,000 (base value of equipment) — $ 60,000

2. Observation of rural roads projects for planning, design, and construction; Bolivia, Mexico, and the U.S.A.
   - Two months for seven persons.

   - Round trip, 1,500 x 7 = 10,500
   - Per Diem, 60 x 40 x 7 = 16,800
   - Extra Travel, 500 x 7 = 3,500
   - $30,800 — Use $ 31,000

3. Specialist for organizing control of spare parts from new warehousing facility; two steps.

   - Two trips U.S.A. to Asuncion, one for four months and one year later a follow-up for one month. — $ 28,000

4. Specialist in Equipment Procurement to evaluate and to determine equipment needs, to review equipment available in Brazil and Argentina and to assist in preparing IFB's for procurement.

   - Three person months (nonadd - to be funded from tech. support) — $ 17,500

5. Social Scientist for two years to provide technical assistance for improving the infrastructure between the Ministry and the small farmer clients and for improving communication between the Ministry and the farmers.

- Salary and fringes	$60,000 x 2 =	$120,000	
- Per Diem (in country)	3,000 x 2 =	6,000	
- Transportation	30,000	30,000	
- Materials, Misc.	10,000	10,000	
- Contingency	9,000	9,000	$175,000

6. **Organizational Behavior Training in the U.S. or Puerto Rico for the education specialist.**

- Two round trips	$2,500	
- One month per diem	1,500	$ 4,000
	Total	$298,000

7. Other Training

a. Operators of major equipment units will be trained through programs arranged by the equipment suppliers. Requests for bid proposals for the major pieces of equipment will call for the training of operators for each and all units. This factor will be one of the elements in evaluating the various bid proposals. To the extend possible, the training will be carried out on specific Project roads.

b. To give the chief of Caminos Vecinales, the four regional technicians and the USAID Paraguayan engineer a well rounded appreciation of how other countries with more experience go about their rural road planning and construction, these particular people will be given special training through an observation tour to Bolivia, Mexico and the United States.

In Bolivia, they will visit AID-sponsored rural road projects in areas having terrain similar to the Project areas. In Mexico, which has an extensive system of rural roads quite similar in many respects to the roads of this project, the group will follow through the details of conception, planning, financing, design and construction on several roads representing various conditions.

In the United States, the focus will be on those unsurfaced (earth) country and township roads which serve rural areas in states west of the Mississippi River.

c. It is unlikely that a person skilled in advanced consultive teaching techniques can be found for the education specialist position. Training in such techniques is not available locally. The few people who have such training would probably not be available for this project. Consequently, training outside Paraguay for the education specialist is projected. Such training will probably undertaken in Puerto Rico or the U.S.

229

8. **General outline of needs for and duties of specialists.**

a. Spare Parts Specialist

To insure that the spare parts (20% of the value of the equipment) are properly cataloged and installed in the project warehouse facility a Specialist will be brought to the project for four months during the arrival of the first group of equipment. A year later, when the second group of equipment units is arriving, he will come back to the project as a follow-up and for again coordinating the warehousing of the accompanying spare parts.

The U.S.A. or TCN specialist to be brought to the project will have at least five years experience in spare parts warehousing and control. He must have a good working knowledge of Spanish. He will work directly with the GOP counterpart warehouseman.

b. Specialist in Equipment Procurement

- This specialist will visit similar projects and equipment manufacturers in Brazil and Argentina to evaluate availability of equipment and its capability and utility for performance in this program. Based on this evaluation a listing of equipment needs will be determined and IFB's for its procurement prepared.

- He will be a qualified and experienced professional in equipment operation, capability and procurement. He will be a short-term consultant and will be assigned to work with VDGRC which will coordinate this work with USAID for approval prior to procurement.

c. Social Scientist

- The social scientist will provide assistance to strenghten organizationally the regional and local road committees, to sensitize the entire rural roads structure to the transportation needs of small farmers, to sensitize farmers to the need to perform preventive maintenance timely, and to establish with the department of Caminos Vecinales the institutional capacity to carry our the above functions upon the termination of this assistance. The social scientist will work directly with the education specialist in determining the educational needs of the project, in designing educational materials and in conducting training. The education specialist with the assistance of the social scientist for two years and training in organizational behavior should by himself be able to handle effectively the training requirements of the project after the social scientist consultant leaves.

A.3 MATERIALS: $750,000

Culverts

The culverts used in the construction and improvement of project roads will be of reinforced concrete or of wood. It is estimated that nine meters of culvert will be needed for each kilometer of road improved. A total of 12,600 meters of culvert is expected to be needed. AID is to finance 7,560 meters and the GOP 5,040 meters. The average diameter of the culvert required is expected to be 80 centimeters. This size culvert now costs $86.00 per meter. The price of culvert has been relatively stable for the last couple of years therefore an annual inflation factor of only five percent has been applied against this item and assumed average purchase dates are: culvert for 216,552 and 632 kilometers respectively in January of 1980, 81 and 82.

Cost Summary

1980	216 x 9m x $86 x (1.10 inflation)	= 183,902
1981	552 x 9m x $86 x (1.15 inflation)	= 491,335
1982	632 x 9m x $86 x (1.20 inflation)	= 587,000
		$1,262,237

AID Loan : $766,000 (rounded)
GOP Counterpart : $496,140

231

A.4 INSTITUTIONAL ANALYSIS : $200,000

It is estimated that six person months each of the following specialists will be needed to carry out the analysis: a transportation economist, a transportation engineer, a road equipment specialist, a road maintenance specialist, an agricultural economist with experience in rural taxation and a systems analyst. The compositinn of the team will be modified in accordance with the experience gained under the project.

The estimated cost of the study is $200,000, calculated as follows: 36 person months x $5,500 per month = $200,000.

B. COUNTERPART
B.1

RURAL ROADS

Annual Disbursements

First Year

GOP/MOPC:

Fuel	US$ 3,000
Office equipment	8,000
MOPC support	119,700
	130,700

Second Year

GOP/MOPC:

Fuel and lubricants	165,690
Equipment operators wages	94,430
Equipment maintenance	51,333
Vehicle drivers	57,190
Materials	99,000
MOPC support	127,540
	595,183

Communities:

Labor	55,100
Fuel	22,500
Materials	22,500
	100,100

Third Year

GOP/MOPC:

Fuel and lubricants	206,405
Equipment operators wages	124,785
Equipment maintenance	51,334
Vehicle drivers	84,405
Materials	254,000
MOPC support	114,380
	835,309

Communities:

Labor	154,900
Fuel	58,500
Materials	58,500
	271,900

233

Fourth Year

GOP/MOPC:

Fuel and lubricants	US$ 195,905
Equipment operators wages	124,785
Equipment maintenance	51,333
Vehicle drivers	84,405
Materials	293,000
MOPC support	114,380
	863,808

Communities:

Labor	205,000
Fuel	69,000
Materials	69,000
	343,000

Annual

GOP/MOPC:

First year	US$ 130,700
Second year	595,183
Third year	835,309
Fourth year	863,808
Total	2,425,000

Communities:

First year	- -
Second year	100,100
Third year	271,900
Fourth year	343,000
Total	715,000

B.1

ESTIMATED FUEL COST
FIRST YEAR

		No. of Unit	Machine Hours Each	Fuel per Hour	Fuel Consumed	Unit Cost of Fuel	Total Cost
Motorgrader		4	1,500	17.4	104,400	0.21	21,924
Farm tractor		6	"	12.0	108,000	0.21	22,680
Farm tractor		4	"	15.0	90,000	0.21	18,900
Bulldozer		4	"	17.8	106,800	0.21	22,428
Fronted loader		2	"	17.4	52,200	0.21	10,962
Dump truck		8	"	9.0	108,000	0.21	22,680
							119,574
Pick-up truck (3/4 t.)		4	1,500	6.0	36,000	0.21	7,560
Pick-up (double cabin)		2	"	6.0	18,000	0.21	3,780
Flatbed truck		4	"	8.0	48,000	0.21	10,080
Water truck	60%	1	900	10.0	9,000	0.21	1,890
							23,310
Mobile crane	60%	1	900	7.0	6,300	0.21	1,323
Mobile shop	"	2	"	8.0	14,400	0.21	3,024
Lubrication truck	"	4	"	8.0	28,800	0.21	6,043
Low bay truck	"	1	"	12.0	10,800	0.21	2,268
Cement mixer	"	2	"	3.0	5,400	0.21	1,134
Electric generator	"	4	"	10.0	36,000	0.21	7,560
							21,357
							164,241

235

ESTIMATED OF FUEL COST
SECOND AND THIRD YEARS

Units		No. of Unit	Machine Hours Each	Fuel per Hour	Fuel Consumed	Unit Cost of Fuel	Total Cost
Motorgrader		6	3,000	17.4	313,200	0.21	65,772
Farm tractor		6	"	12.0	216,000	0.21	45,360
Farm tractor		4	"	15.0	180,000	0.21	37,800
Bulldozer		4	"	17.8	213,600	0.21	44,856
~~Bulldozer~~ Scrapador		2	"	26.5	159,000	0.21	33,390
Fronted loader		4	"	17.4	208,800	0.21	43,848
Dump truck		16	"	9.0	432,000	0.21	90,720
							361,746
~~Pick~~-up truck (3/4)		4	3,000	6.0	72,000	0.21	15,120
Pick-up truck (double cabin)		2	"	6.0	36,000	0.21	7,560
Flatbed truck		5	"	8.0	120,000	0.21	25,200
Water truck	60%	1	1,800	10.0	18,000	0.21	3,780
							51,660
Mobile crane	60%	1	1,800	7.0	12,600	0.21	2,646
Mobile shop	"	4	"	8.0	57,600	0.21	12,096
Lubrication truck	"	4	"	8.0	57,600	0.21	12,096
Low bay truck	"	1	"	12.0	21,600	0.21	4,536
Cement mixer	"	2	"	3.0	10,800	0.21	2,268
Electric generator	"	4	"	10.0	72,000	0.21	15,120
							462,168

B.2 - Equipment operator's wages

anticipating an increase in salaries for next years:

Salaries - Operators and Assistants - 1st year

Item	# of Items	Operator's Salary US$	Assistant's Salary US$	Total US$
Bulldozer - D6 or eq.	4	200	120	15,360
Bulldozer - D7 or eq.	-	-	-	-
Fronted loader	2	200	120	7,680
Motorgrader	4	200	120	15,360
Farm tractor	10	180	-	21,600
Grader	4	180	-	8,640
Mobile crane	1	180	-	2,160
				70,800

Salaries - Operators and Assistants - 2nd & 3rd years

Bulldozer - D6 or eq.	4	200	120	30,720
Bulldozer - D7 or eq.	2	200	120	15,360
Fronted loader	4	200	120	30,720
Motorgrader	6	200	120	46,080
Farm tractor	10	180	-	43,200
Grader	4	180	-	17,280
Mobile crane	1	180	-	4,320
				187,680
		Subtotal:		258,480
		Fringe benefits (33%)		85,298
		TOTAL		343,778

237

B.3 - Equipment Maintenance

Each Regional Road Committee will have one group composed of 1 mechanic and 2 assistants. In that form, we will have:

Mechanics	: 400 x 1 x 4 x 12 x 3 x 1.33* =	$ 76,608
Assistants	: 200 x 2 x 4 x 12 x 3 x 1.33 =	$ 76,608
TOTAL	:	$153,216
Used	: $154,000	

* Fringe benefits' coefficient

B.4 - Drivers' Salaries

First year	: 4+1+4+1+1+2+8 =	21
Second year	: 16+5+2+4+1+1+2 =	31
Third year	: 16+5+2+4+1+1+2 =	31

Salary: US$170/month

21 x 170 x 12	=	US$ 42,840
31 x 170 x 12	=	63,240
31 x 170 x 12	=	63,240
SubTotal:		169,320
Fringe benefits:		55,875
Total:		$225,195

Used: US$226,000

B.5 - Materials for culverts and bridges: as it was already mentioned in paragraph A.3, the national counterpart in this case will be:

GOP	:	US$ 580,000
Communities:		150,000
TOTAL	:	730,000

B.6 - MOPC Support and Overhead

There will be a need of 16 new jobs for the Project's Central Office, of which 13 will be permanent and 3 will be under contract for the two first years of the project. Also, there will be new 4 permanent jobs en each of the Regional Road Committees. This will need a total investment of $476,000.

BRIDGES:

All the bridges in this project will be of wood. The construction average used for calculation is of 2m/Km. For the construction of 1 m of wooden bridge, using MOPC's project-types, we will need an average of 974 inches^2 m. Price of 1 inch^{2}m = $0.11.

1400 x 2 x 974 x 0.11 = $299,992

Used: $300,000

Contributions : Counterpart will cover all these expenses:

GOP/MOPC : $150,000

Communities : $150,000

Community's contribution will be in the form of construction materials (wood).

CAMINOS VECINALES

PROJECT DIVISION

New Permanent Charges

- Directorate

Charge	Period for Project	Salary(US$/month)
1 project director	4 years	714.29
1 secretary	4 "	198.41
1 office boy	4 "	79.37
- Technical Section		
1 surveyor	3 "	317.46
1 draftsman	3 "	142.86
- Administrative Section		
1 administrative director	4 "	476.19
2 administrative junior	4 "	277.78
1 secretary	4 "	198.41
2 inspectors	4 "	317.46
1 office boy	4 "	79.37
- Local Training		
1 local educationist	4 "	396.83
- Procurement		
1 junior procurement	4 "	277.78

4 years: 2,896.84 x 12 x 4 x 1.33 = US$184,880.64

3 years: 460.32 x 12 x 3 x 1.33 = 22,040.12

CAMINOS VECINALES

PROJECT DIVISION

Contracts

Charge	Period	Salary
2 draftsman	2 years	158.73
1 senior procurement	2 "	476.19

793.65 x 12 x 2 x 1.33 = US$25,333.31

REGIONAL OFFICES (New permanent charges)

1 regional chief	4 "	396.83
1 administrator	4 "	238.10
1 warehouse chief	4 "	158.73
1 secretary	4 "	158.73

952.39 x 12 x 4 x 1.33 x 4 Departments = US$243,202.35

FINAL TOTAL:

US$	184,880.64
	22,040.12
	25,333.31
	243,202.35
US$	475,456.42

L U B R I C A N T S

Equipment	# of Equipment 1st Year	# of Equipment 2nd Year	# of Equipment Total	Hour Cost US$	Hours per Year 1st Year	Hours per Year 2nd & 3rd Years	Total Cost 1st Year	Total Cost 2nd & 3rd Years	Total US$
Motorgrader	4	2	6	0.69	1500	3000	4,140	12,420	16,560
Bulldozer(D6 equiv)	4	-	4	0.79	1500	3000	4,740	9,480	14,220
Bulldozer(D7 equiv)	-	2	2	1.00	-	3000	-	6,000	6,000
Fronted loader	2	2	4	0.84	1500	3000	2,520	10,080	12,600
Farm tractor(80HP)	6	-	6	0.35	1500	3000	3,150	6,300	9,450
Farm tractor(110HP)	4	-	4	0.54	1500	3000	3,240	6,480	9,720
Dump truck	8	8	16	0.20	1500	3000	2,400	9,600	12,000
									80,550

Used: US$80,000

FARM DATA

This Annex is put together in the following manner:

(a) The Small Farm Survey sub-sample used in the four departments of this project is described in Number and % terms (page 1) characteristics of low and high income groups (page 2), land use by farm size category (page 3) and average hectarage by crop (page 4).

(b) Production data by crop and farm size is presented next (pages 5-8).

(c) Net crop income/Ha. (page 9) was used to develop a composite change in net crop income per Ha. (page 10).

(d) Net income from all livestock/Ha. was developed (page 11) and

(e) both (c) and (d) above used to construct weighted changes in income per Ha. from annual crops, all livestock, crops and livestock or per farm (pages 12-13).

(f) Calculations used to determine the $ value of a yield increase are shown on page 14 followed by a hectarage increase on page 15.

(g) The calculations for average tonnage of crops sold per Ha. are shown on page 16.

Exhibit 1

Number and % of Farms by Size Category in Project Departments

Department		Total Farms Sampled		Sample by Farm Size 1/			
		No.	%	1	2	3	4
Paraguarí	No.	198	57	104	42	40	12
	%		100	52	21	20	7
Cordillera	No.	54	16	32	9	9	4
	%		100	59	17	17	7
Caaguazú	No.	40	12	13	6	17	4
	%		100	32	15	43	10
Guairá	No.	50	15	21	7	19	3
	%		100	42	14	38	6
Total	No.	342	100	170	64	85	23
	%		100	50	19	25	6

1/ 1 = 0-4.9 Ha.; 2 = 5-9.9; 3 = 10-20.9; 4 = 21-50.9

244

Exhibit 1

Characteristics of Landholdings by Size Category and Income Group

Item	FARM SIZE 1/							
	1		2		3		4	
	Low 2/	High 3/	Low	High	Low	High	Low	High
1. Total Farm (Ha.)	2.1	3.3	6.9	7.1	12.4	13.4	37.9	31.3
2. Annual Crops (Ha.)	1.2	2.2	2.2	4.0	2.7	4.4	2.6	5.7
3. Permanent (Ha.)	0.6	0.7	1.6	1.0	1.0	1.8	8.8	5.5
4. Pasture (Ha.)	1.2	0.9	3.0	2.6	4.2	4.3	21.6	20.3
5. Net I.L. (₡s.)	15,130	60,350	10,215	62,620	-6,000	36,135	8,960	51,820
6. Net I.C. (₡s.)	19,360	74,600	62,000	150,600	50,600	148,000	144,130	174,500
7. Net F.I. 4/ (₡s.)	33,204	166,750	58,300	213,380	60,280	222,430	-26,270	220,240
8. (5/7)100 (%)	45	36	17	29	0	16	?	24
9. (6/7)100 (%)	58	45	106	71	84	67	?	79
10. Hired Labor (₡s.)	2,130	4,320	3,790	3,500	2,780	6,500	20,180	6,400
11. Net HI (₡s.)	85,330	228,640	98,070	246,200	94,420	244,170	11,700	240,950
12. (7/11)100 (%)	39	73	59	87	64	91	?	91
13. % Crop sold (%)	18	22	27	35	17	31	1	11
14. % L Sold (%)	43	29	82	58	54	41	55	38

1/ 1 = 0-4.9 Ha.; 2 = 5-9.9; 3 = 10-20.9; 4 = 21-50.9

2/ Low = Farmers with < 100,000 ₡s (790 $ U.S.) Net Farm Income

3/ High = Farmers with > 100,000 ₡s. (790 $ U.S.) Net Farm Income

4/ Net F.I. ≠ Net IL + Net I.C.

L = Livestock; C = Crops (Annual, permanent, intercropped); I = Income; H = Household

Exhibit 1

Characteristics of Landholdings by Farm Size

Total Sample by Farm Size 1/

	1		2		3		4	
	Ha.	%	Ha.	%	Ha.	%	Ha.	%
1. Total Farm Size (ha) (2+3+5+6) or (6+8)	2.2 2/	100 3/	7.0	100	13.1	100	34.8	100
2. Annual Crops (Ha.)	1.4	64	3.1	44	3.8	29	4.2	12
3. Permanent Crops (Ha.)	0.6	27	1.2	17	1.6	12	7.0	20
4. Total Pasture (Ha.)	0.7	32	1.9	27	3.3	25	15.7	45
5. Livestock (Ha.)	0.2	9	0.5	7	1.9	14	11.5	33
6. Other (Ha.)	0.7	32	2.2	32	5.8	45	12.1	35
7. Intensity of Land Use 4/ (%)	123		89		66		77	
8. Acreage in Crops & Livestock (Ha.)	1.5	68	4.8	69	7.3	56	22.7	65

1/ 1 = 0-4.9 Ha.; 2 = 5-9.9; 3 = 10-20.9; 4 = 21-50.9

2/ Total Farm Size = Annual Crops + Permanent Crops + Livestock + Other (Pasture + Forestry + Waste)

3/ Existence of Intercropping means that % do not add up to 100%

4/ Estimated acreage utilized for crops + livestock divided by stated farm size or (2+3+4)/1 x 100

Exhibit 1

Average Ha. by Crop, Size of Farm and Income Group for Selected Crops

Item	FARM SIZE 1/							
	1		2		3		4	
	Low 2/	High 3/	Low	High	Low	High	Low	High
1. Mandioca (Ha.)	0.6	1.1	0.9	1.3	1.2	1.9	1.5	9.2
2. Corn (Ha.)	0.6	0.8	1.0	1.4	1.1	1.7	1.4	2.6
3. Beans (Ha.)	0.4	0.6	0.6	0.7	0.7	0.9	0.5	0.9
4. Peanuts (Ha.)	0.3	0.8	0.4	1.1	0.3	1.4	0.3	1.4
5. Sugarcane (Ha.)	0.7	0.5	1.1	0.8	0.9	0.8	18.7	1.0
6. Cotton (Ha.)	0.6	0.9	1.1	1.7	0.8	1.8	1.8	2.4
7. Tobacco (Ha.)	0.4	0.4	0.5	0.8	0.5	0.7	1.0	1.3

1/ 1 = 0-4.9 Ha.; 2 = 5-9.9; 3 = 10-20.9; 4 = 21-50.9

2/ Low = Farmers with < 100,000 ₡s (790 $US) Net Farm Income

3/ High - Farmers with > 100,000 ₡s (790 $US) Net Farm Income

Exhibit 1

PRODUCTION DATA BY CROP FOR FARM SIZE 0-4.9 HA.

Crop	Yield/Ha (Ks)		% Crop Sold		Cost of Production/Ha		Net Income/Ha		Cash Income/Ha	
	Low	High	Low	High	Low	High	Low	High	Low	High
Mandioca	6,615	28,565	8	34	14,684	10,315	16,640	49,500	6,950	66,150
Corn	1,000	847	14	38	3,150	3,000	6,545	5,430	5,650	4,650
Beans	500	520	22	79	2,350	3,980	11,395	11,455	10,465	9,265
Peanuts	550	7,865	16	39	2,490	3,690	10,525	30,076	6,060	5,685
Sugar Cane	27,060	925	100	18	8,590	3,440	23,665	4,830	39,080	11,540
Cotton	980	1,355	71	63	13,680	8,740	18,090	39,507	31,760	45,865
Tobacco	1,065	1,410	76	57	3,895	8,070	24,233	46,415	31,645	34,130

PRODUCTION DATA BY CROP FOR FARM SIZE 5-9.9 HA.

Crop	Yield/Ha (Ks)		% Crop Sold		Cost of Production/Ha		Net Income/Ha		Cash Income/Ha	
	Low	High	Low	High	Low	High	Low	High	Low	High
Mandioca	5,160	32,980	4	43	3,020	14,380	18,120	32,740	6,406	100,515
Corn	1,030	1,070	13	11	2,950	1,050	5,865	11,200	6,285	5,735
Beans	575	575	30	29	2,580	1,715	16,145	11,340	23,515	12,105
Peanuts	715	7,390	100	19	8,480	1,400	16,855	31,630	23,810	23,800
Sugar Cane	19,100	840	64	50	5,030	530	21,765	23,090	28,620	47,510
Cotton	980	1,115	51	56	6,210	7,450	28,160	32,620	33,595	38,930
Tobacco	1,080	1,205	18	88	2,840	2,735	34,700	46,630	30,280	47,370

Exhibit 1

PRODUCTION DATA BY CROP FOR FARM SIZE 10-20.9 HA.

Crop	Yield/Ha (Ks)		% Crop Sold		Cost of Production/Ha		Net Income/Ha		Cash Income/Ha	
	Low	High	Low	High	Low	High	Low	High	Low	High
Mandioca	4,775	23,230	9	69	7,210	7,530	15,770	19,960		
Corn	1,060	1,110	42	17	2,520	1,810	7,760	8,730		
Beans	590	540	10	30	2,360	3,270	10,070	10,950		
Peanuts	700	7,205	17	9	--	4,215	13,940	24,100		
Sugar Cane	9,540	805	100	6	3,600	6,760	3,935	13,940		
Cotton	760	1,020	49	87	9,035	4,970	22,775	37,810		
Tobacco	1,150	1,250	60	62	3,955	6,650	46,365	53,200		

PRODUCTION DATA BY CROP FOR FARM SIZE 21-50.9 HA.

Crop	Yield/Ha (Ks)		% Crop Sold		Cost of Production/Ha		Net Income/Ha		Cash Income/Ha	
	Low	High	Low	High	Low	High	Low	High	Low	High
Mandioca	5,315	23,855	4	21	3,605	14,855	17,900	16,465		
Corn	1,320	950	27	29	8,020	2,320	3,115	8,120		
Beans	770	470	39	12	2,685	1,615	14,580	14,620		
Peanuts	2,010	5,740	0	0	--	9,170	43,780	21,340		
Sugar Cane	20,520	875	0	57	3,405	8,680	25,110	12,390		
Cotton	1,125	1,030	100	80	18,240	7,025	29,475	36,250		
Tobacco	1,190	1,440	92	56	5,200	4,575	57,300	73,180		

Average Net Crop Income per Ha. by Crop, Farm Size and Income Group for Selected Crops

CROP	FARM SIZE 1/							
	1		2		3		4	
	Low 2/	High	Low	High	Low	High	Low	High
	(000 ₡s.)							
1. M	16.6	49.5	18.1	32.7	15.8	20.0	17.9	16.5
2. C	6.5	5.4	5.9	11.2	7.8	8.7	3.1	8.1
3. B	11.4	11.5	16.1	11.3	10.1	11.0	14.6	14.6
4. P	10.5	30.1	16.9	31.6	13.9	24.1	43.8	21.3
5. S	23.7	4.8	21.8	23.1	3.9	13.9	25.1	12.4
6. Co	18.1	39.5	28.2	32.6	22.8	37.8	29.5	36.3
7. T	24.2	46.4	34.7	46.6	46.4	53.2	57.3	73.2

1/ 1 = 0-4.9 Ha.; 2 = 5-9.9; 3 = 10-20.9; 4 = 21-50.9

2/ Low = farmers with less than 100,000 ₡s. net farm income
High = farmers with more than 100,000 ₡s. net farm income

M = Mandioca C = Corn B = Beans

P = Peanuts S = Sugarcane Co = Cotton

T = Tobacco

Composite Change in Net Crop Income/Ha by Farm Size and Income Group

CROP	FARM SIZE 1/							
	1		2		3		4	
	000 ₡	$US						
1. M	32.9	260 2/	14.6	115	4.2	33	8.6	68
2. C	-1.1	-9	5.3	42	0.9	7	5.0	40
3. B	0.1	0.8	-4.8	-38	0.9	7	0	0
4. P	19.6	156	14.7	117	10.2	80	-22.5	-178
5. S	-18.9	-150	1.3	10	10.0	80	-12.7	-100
6. Co	21.4	170	4.4	35	15.0	120	6.8	54
7. T	22.2	175	11.9	95	6.8	54	15.9	126
8. Agg △ NCI/Ha		600 3/		375		390		10
9. N(%)	170	(50)	64	(19)	85	(25)	23	(6)
10. Composite △ NCI/Ha.	470 4/							

1/ 1 = 0-4.9 Ha.; 2= 5-9.9; 3 = 10-20.9; 4 = 21-50.9

2/ Difference in net crop income/Ha for each crop between Low and High net farm income groups of farmers expressed in ₡s. or $US at $ 1 US = 126 ₡s.

3/ 600 = summation of $ lines 1-7

4/ 470 = (600 x 0.50) + (375 x 0.19) + (390 x 0.25) + (10 x 0.06)

M = Mandioca; C = Corn; B = Beans; P = Peanuts; S = Sugarcane
Co = Cotton; T = Tobacco
Agg = aggregate; △ = Change; NCI = Net crop income; N = Number of farms sampled.

Composite Change in Net Income from Livestock/Ha. by Farm Size and Income Group

	FARM SIZE 1/							
	1		2		3		4	
	Low	High	Low	High	Low	High	Low	High
1. N IL	15,130	60,350	10,215	62,620	-6,000	36,135	8,960	51,820
2. Total Pasture(Ha)	1.2	0.9	3.0	2.6	4.2	4.3	21.6	20.3
3. N IL/Ha.₡s.	12,608	67,055	3,405	24,085	-1,430	8,400	415	2,550
$	100	530	27	190	- 11	67	3	20
4. No.inSample	147	23	31	33	28	57	12	11
5. Wt.Av. NIL/Ha. $	158 2/		111		41		11	
6. No(%)Total	170	(50)	64	(19)	85	(25)	23	(6)
7. Agg.Wt.Av. NIL/Ha	120 3/							
8. △ NIL/Ha. ₡s	54,447		20,680		9,830		2,135	
$	430		160		80		20	
9. Composite △ NIL/Ha. ₡s	33,640							
$	270 4/							

1/ 1 = 0-4.9 Ha.; 2 = 5-9.9; 3 = 10-20.9; 4 = 21-50.9

2/ 158 = (100 x 147) + (530 x 23) / 170

3/ 120 = (158 x 0.50) + (111 x 0.19) + (41 x0.25) + (11 x 0.06)
4/ 270 = (430 x 0.50) + (160 x 0.19) etc.
N = Net; I = Income; L = Livestock; Agg. = Aggregate; Wt = Weighted; Av. = Average; △ = Change in; Low/High = Less or more than 100,000 ₡s. Net Farm Income

Per Hectare and Total Change in Income from Crops and Livestock for all Farm Sizes

A. Net Crop I	FARM SIZE 1/				
	1	2	3	4	Composite △/Ha
% △ I		($ U.S./Ha.)			
2	12	7	8	0.2	9
5	30	19	20	0.5	24
10	60	38	39	1	47
100	600	375	390	10	470
B. Net Livestock I					
% △ I					
2	9	3	2	0.5	5
5	22	8	4	1	14
10	43	16	8	2	27
100	430	160	80	20	270
C. Total Aggregated Composite Change/Ha. (A+B)					
% △ I					
2	21	10	10	0.7	14 2/
5	52	27	24	1.5	38
10	103	54	47	3	74
100	1,030	540	47	30	740
D. Agg. △ I (Total)					Agg. △ I/Farm
Av. Ha. used	1.5	4.8	7.3	23	All sizes
N	170	64	85	23	
% △ I					
2	21 2/	67	102	322	70 3/
5	57	182	277	874	185
10	111	355	540	1,702	370
100	1,110	3,350	5,400	17,020	3,700

1/ 1 = 0-4.9 Ha.; 2 = 5-9.9; 3 = 10-20.9; 4 = 21-50.9

2/ 21 = 14 x 1.5; 67 = 14 x 4.8; 102 = 14 x 7.3; 322 = 14 x 23

3/ 70 = (21 x 170) + (67 x 64) + etc. /342

I = Income; Wt = weighted; Av. = Average; Agg = Aggregate;

△ = Change in ; N = Number of farms sampled

255

Per Hectare and Total Change in Income from Crops and Livestock for Farms less than 10 Ha.

	FARM SIZE 1/		
	1	2	Wt.Av./Ha.
A. Net Crop I			
% △ I	($ U.S./Ha.)		
2	12	7	11
5	30	18	27
10	60	37	54
100	600	375	540
B. Net Livestock I			
% △ I			
2	9	3	7
5	22	8	18
10	43	16	36
100	430	160	360
C. Total Aggregated	Wt. Av./Ha		A + B
% △ I			
2			18 *
5			45
10			90
100			900
D. Agg. △ I(Total)			Agg. △ I/Farm
Av. Ha. used	1.5	4.8	< 10 Ha.
N	170	64	
% △ I			
2	27 2/	86	43 3/
5	68	216	108
10	135	432	216
100	1,350	4,320	2,160

1/ 1 = 0-4.9 Ha.; 2 = 5 -9.9

2/ 27 = 18* x 1.5; 86 = 18 x 4.8

3/ 43 = (27 x 170) + (86 x 64) / 234

I = Income; Wt = Weighted; Av = Average; Agg = aggregated;
△ = Change in ; N = Number of farms sampled

Difference in Yield/Ha. by Farm Size and Income

	Farm Size (1)							
	1		2		3		4	
	Low(2)	High	Low	High	Low	High	Low	High
1. Co. t/Ha.	1.0	1.4	1.0	1.1	0.8	1.0	1.1	1.0
2. Δt	0.4		0.1		0.2		-0.1	
3. Wt. Δ	0.238(3) x (38.7 Gs/Kg. = 2,190 Gs. = 17 US$).							
4. N	53		29		48		8	
5. T t/Ha.	1.1	1.4	1.1	1.2	1.2	1.3	1.2	1.4
6. Δt	0.3		0.1		0.1		0.2	
7. Wt. Δ	0.171 x (43.6 Gs/Kg. = 7,456 Gs = 59 US$).							
8. N	18		13		21		3	
9. M t/Ha.	6.6	28.6	5.2	33.0	4.8	23.2	5.3	23.9
10. Δt	22.0		27.8		18.4		18.6	
11. Wt Δ	22.025 x (8.3 Gs/Kg = 182,808 Gs = 1,450 US$)							
12. N	120		32		36		15	
13. P t/Ha.	0.5	7.9	0.7	7.4	0.7	7.2	2.0	5.7
14. Δt	7.4		6.7		6.5		3.7	
15. Wt. Δ	6.615 x (26.2 Gs/Kg = 73,310 Gs = 1,375 US$)							
16. N	33		25		41		8	
17. Total Wt Δ	US$ 2,900 (3 + 7 + 11 + 15)							
18. 2% of 17.	US$ 58							

(1) 1 = 0-4.9; 2 = 5-9.9; 3 = 10-20.9; 4 = 21-50.9

(2) Low/High = less or more than 100,000 Gs. net farm income.
(3) 0.238 = (0.4 x 53) + (0.1 x 29) + (0.2 x 48) + (-0.1 x 8) /138
Co = Cotton, T = Tobacco, M = Mandioca, P = peanuts, t = ton, Δ = Change.

Difference in Net Income/Ha by Farm Size and Income

	FARM SIZE 1/							
	1		2		3		4	
	Low 2/	High	Low	High	Low	High	Low	High
	(000 ₡s)							
1. Co. NI/Ha.	18.1	39.5	28.2	32.6	22.8	37.8	29.5	36.3
2. △ I	21.4		4.4		15.0		6.8	
3. Wt △/Ha	14.7 3/ ($US 117)							
4. N = 137	53		29		47		8	
5. T.NI/Ha	24.2	46.4	34.7	46.6	46.4	53.2	57.3	73.2
6. △I	22.2		11.9		6.8		15.9	
7. Wt △/Ha	12.5 ($US 99)							
8. N = 65	18		13		31		3	
9. M. NI/Ha	16.6	49.5	18.1	32.7	15.8	20.0	17.9	16.5
10. △I	32.9		14.6		4.2		- 1.4	
11. Wt △/Ha	21.2 ($US 168)							
12. N = 233	127		39		50		17	
13. P NI/Ha	10.5	30.1	16.9	31.6	13.9	24.1	43.8	21.3
14. △I	19.6		14.7		10.2		-22.5	
15. Wt △/Ha	11.0 ($US 87)							
16. N = 150	42		34		61		13	
17. Total Wt △/Ha	470							
18. (0.5 Ha)(17)	235							

1/ 1 = 0-4.9 Ha; 2 = 5-9.9; 3 = 10-20.9; 4 = 21-50.9

2/ Low/High = Less or more than 100,000 ₡ Net Farm Income

3/ 14.7 = (21.4 x 53) + (4.4 x 29) + (15.0 x 47) + (6.8 x 8) / 137

Co = Cotton, T = Tobacco, M = Mandioca, P = Peanuts, NI - Net Income
Wt = Weighted, △ = Change, N = Sample Number, $1US = ₡s 126

Exhibit 1

Annual Crops: Av. Tons Sold/Ha by Farm Size and Income Group

	FARM SIZE 1/							
	1		2		3		4	
	Low	High	Low	High	Low	High	Low	High
Kg Crop Sold	965	1,420	4,060	4,020	1,690	4,700	1,360	8,940
Tons Sold	1	1.4	4.1	4.0	1.7	4.7	1.4	8.9
Ha. (Annual Crops)	1.2	2.2	2.2	4.0	2.7	4.4	2.6	5.7
Tons Sold/Ha	0.80	0.65	1.85	1.01	0.63	1.07	0.52	1.57
No in Sample	179	51	37	78	47	152	10	18
Av.Tons Sold/Ha	0.77 3/		1.28		0.97		1.20	
No (%) Total	230	(40)	115	(20)	199	(35)	28	(5)
Agg. Wt. Tons Sold/Ha.	0.97 4/							
△ Tons Sold/Ha.	-0.15		-0.84		+ 0.44		+ 1.05	
Agg. Wt. Av. △ Tons Sold/Ha.	- 0.03 5/							

1/ 1 = 0-4.9 Ha.; 2 = 5-9.9; 3 = 10-20.9; 4 = 21-50.9

2/ Low = Farmers with less than 100,000 ₡s Net Farm Income
High = Farmers with more than 100,000 ₡s Net Farm Income

3/ 0.77 = (179 x 0.80) + (51 x 0.65) / 230

4/ 0.97 = (0.77 x 0.40) + (1.28 x 0.20) + (0.97 x 0.35) + (1.20 x 0.05)

5/ -0.03 = (-0.15 x 0.40) + (-0.84 x 0.20) etc.

Agg. = Aggregate; Wt.= Weighted; Av. = Average

259

Estimated $ Value of a 5% Change in Income from
Annual Crops, All Livestock and by Farm *

	FARM SIZE 1/				
	1	2	3	4	WT. I
No. (%)	170(50)	64(19)	85(25)	23(6)	
A. Annual Crops △ NCI/Ha.($) 5%	30	19	20	0.5	24 2/
B. All Livestock △ NLI/Ha. ($) 5%	22	8	4	1	14 3/
C. Crops + Livestock (A + B) △ I ($) 5%	52	27	24	1.5	38 *
D. By Farm △ I ($) 5%	57 4/	182	277	874	185 5/
Av. Ha. Used	1.5	4.8	7.3	23	
E. Ton/Ha Sold 6/	0.77	1.28	0.97	1.20	

1/ 1 = 0-4.9 Ha.; 2 = 5-9.9; 3 = 10-20.9; 4 = 21-50.9

2/ 24 = (30 x 0.50) + (19 x 0.19) + (20 x 0.25) + (0.5 x 0.06)

3/ 14 = (22 x 0.50) + (8 x 0.19) etc.

4/ 57 = (38 x 1.5); 182 = (38 x 4.8); etc.

5/ 185 = (57 x 0.50) + (182 x 0.19) + (277 x 0.25) + (874 x 0.06)

6/ This is a weighted average. See Annex 1 page 16

N = Net; C = Annual Crops; I = Income; △ = Change in; No. = number of farms sampled
Wt. = weighted

* For methodology used, see Annex 1 page 9-10 for the change in crop income, page 11 for that of all livestock, page 12-13 for construction of Tables 1 and 2 in this section.

Estimated $ Value of a 2-10% Change in Income/FARM
for Under 10 Has. and All Sizes. *

Less than 10 Has.			All Farm Sizes	
% Δ I	US$	Gs.	US$	Gs.
2	43	5,420	70	8,820
5	108	13,600	185	23,310
10	216	27,215	370	46,620

* See Annex 1 ___ for methodology used. US$ 1 = 126 Gs.

$ U.S. Value of Difference in Yield/Ha. by All Farm Sizes and Income Groups. *

	All Farm Sizes ($ U.S.)
1. Cotton	17
2. Tobacco	59
3. Mandioca	1,450
4. Peanuts	1,375
5. Total	2,900
6. 2% of 5	58
7. 5% of 5	145
8. 10% of 5	290

* For methodology used, see Annex 1 Page 14.

Difference in Net Income/Ha. by Farm Size
and Income. *

C R O P	All Farm Sizes	
	Wt Δ N I/Ha. $ U.S.	
1. Cotton	117	
2. Tobacco	99	
3. Mandioca	168	
4. Peanuts	87	
5. Total	470	
6. (0.5)(5)	235	

* For methodology used, see Annex 1 Page 15 .

EQUATIONAL VERSUS TABULAR CALCULATIONS

To obtain the B/C ratio using the equational approach we employ the methodology outlined in the economic analysis section. Assuming the following area of influence by the road, distribution of farms, and costs associated with the road, we develop values for the five variables contained in the formula.

1.	Hectarage	352	
2.	Farm distribution by farm size 1, 2, 3, 4 respectively	30%, 50%, 20%, 0	
3.	Change in production income		
	(a) weighted average of dY/ha .30 x 52 + .50 x 27 + .20 x 24	$34	
	(b) total production change 352 x $34		11,968
4.	Income from Transport Savings		
	(a) savings per MT/km	$1.60	
	(b) weighted average for Tons/ha sold .30 x .77 + .50 x 1.28 + .20 x .97	1.07	
	(c) hectarage	1352	
	(d) Total road length: 8 kms 1/2 road length	4	
	(e) Total transport savings $1.60 x 1.07 x 352 x 4		2,410
5.	Salvage value - $200/km x 8 km		1,600
6.	Economic construction costs		
	Financial cost	36,000	
	Plus: Administrative Cost (210/km x 8 kms)	1,600	37,680
7.	Maintenance Cost - $185/km x 8 km		1,480

The Benefit/Cost equation that results from the five variables considered can be expressed in general terms as:

$$B/C = \frac{dY_p\ (3.395) + dY_T\ (5.02) + \text{Salvage}\ (.249)}{\text{Rc}\ (.870) + \text{Maint.}\ (4.15)}$$

The salvage variable is included in the above calculations to prove the point made in the economic analysis section that its omission does not appreciably affect the B/C ratio. Substituting the five values from the illustrative example into the equation gives:

$$B/C = \frac{11{,}968\ (3.395) + 2{,}410\ (5.02) + 1{,}600\ (.249)}{37{,}600\ (.870) + 1{,}480\ (4.15)} = 1.365$$

Dropping the salvage variable gives a B/C = 1.355 which is clearly a tolerable difference given the average values used throughout the analysis, and, most importantly, given the resulti[illegible] eduction in calculations needed to be performed by the regional technicians. Hence, the salvage variable should be eliminated from the above work sheet. This same analysis is displayed in tabular form on the following page to verify the equivalence of the equational and tabular methods.

ECONOMIC EVALUATION

Yr.	Road Construction Cost	Maintenance Cost	Total Costs	DF 15%	Present Value Costs	Production Benefits	Transport Benefits	Total Benef.	DF 15%	Present Value Benefits
1	37,680		37,680	.870	32,782		2,410	2,410	.870	2,097
2		1,480	1,480	.756	1,119		2,410	2,410	.756	1,822
3		1,480	1,480	.658	974	11,968	2,410	14,378	.658	9,461
4		1,480	1,480	.572	847	11,968	2,410	14,378	.572	8,224
5		1,480	1,480	.497	736	11,968	2,410	14,378	.497	7,146
6		1,480	1,480	.432	639	11,968	2,410	14,378	.432	6,211
7		1,480	1,480	.376	556	11,968	2,410	14,378	.376	5,406
8		1,480	1,480	.327	484	11,968	2,410	14,378	.327	4,702
9		1,480	1,480	.284	420	11,968	2,410	14,378	.284	4,083
10		1,480	1,480	.249	369	11,968	2,410	15,978*	.249	3,979
					38,926					53,131

$$B/C = \frac{53,131}{38,926} = 1,365$$

*/ Salvage value of $200 x 8 Km = $1600 included here.

CALENDAR FOR THE PLANTING AND HARVESTING OF AGRICULTURAL CROPS

Crops \ Months	Jan.	Feb.	March	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Summer Crops												
Cotton		HHHH	HHHH	HHHH					PP	PPP	PPP	
Rice			HHHH	HHHH						PPP	PPP	
Corn	HHHH						PPP	PPP				HHHH
Soybean				HHHH	HHHH	HHHH				PPP	PPP	PPP
Sorghum	HHHH	HHHH	HHHH						PPP	PPP	PPP	
Tobacco	HHHH	HHHH	HHHH		NNN	NNN		TTT	TTT	TTT	HHHH	HHHH
Winter Crops												
Wheat				PPP	PPP					HHHH	HHHH	
Green Peas				PPP	PPP	PPP	HHHH	HHHH				
Dried Peas				PPP	PPP	PPP HHHH	HHHH	HHHH				

P = Planting
H = Harvesting
T = Transplanting
X = Harvesting for seeds
N = Nursery
S = Setting plants

CALENDAR FOR THE PLANTING AND HARVESTING OF AGRICULTURAL CROPS

Crops \ Months	Jan.	Feb.	March	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Industr. Crops												
Sugarcane							PPP HHH	PPP HHH	PPP HHH			
Sunflower			HHH	HHH				PPP	PPP	PPP		
Peanut	PPP HHH		HHH					PPP	PPP			PPP HHH
Sesame (Short cycle)									PPP			HHH
Sesame (Long cycle)		HHH							PPP			
Spurge (Tártago) two years duration	HHH	HHH	HHH	HHH	HHH				PPP HHH	PPP HHH	HHH	HHH
Tung 6th year					HHH	HHH	HHH		PPP	PPP		
Yerba Mate		HHH	TT HHH	TTT HHH	TTT HHH	HHH						

P = Planting
H = Harvesting

T = Transplanting
X = Harvesting for seeds

N = Nursery
S = Setting plants

CALENDAR FOR THE PLANTING AND HARVESTING OF AGRICULTURAL CROPS

Crops \ Months	Jan.	Feb.	March	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Vegetables												
Garlic		PPP	PPP	PPP						HHH	HHH	HHH
Onion		PPP	PPP	PPP						HHH	HHH	HHH
Habilla	HHH	HHH						PPP	PPP	PPP	PPP HHH	PPP HHH
Pepper				PPP	PPP			HHH	HHH			
Bean	PPP HHH	HHH	HHH	HHH				PPP	PPP	PPP	PPP	PPP HHH
Marteca Bean							PPP	PPP	PPP	HHH	HHH	HHH
Watermelon and Cantaloupe	HHH								PPP	PPP	HHH	HHH
Tomatoes (Exp.)				PPP	PPP			HHH	HHH			
Tomatoes (Consumption)							PPP	PPP			HHH	HHH

P = Planting
H = Harvesting
T = Transplanting
X = Harvesting for seeds
N = Nursery
S = Setting plants

CALENDAR FOR THE PLANTING AND HARVESTING OF AGRICULTURAL CROPS

Crops \ Months	Jan.	Feb.	March	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Roots and Tuber.												
Sweet Potatoe				HHH	HHH			PPP	PPP	PPP		
Cassava (Harvesting begin in 12-18 months)				HHH	HHH	HHH	PPP HHH	PPP				
Potatoe (early)			PPP		HHH							
Potatoes (late)							PPP	PPP			HHH	HHH
Fibers												
Kenaf and Yute fiber	HHH	HHH	HHH						PPP	PPP	PPP	
Kenaf and Yute Seed				HHH	HHH				PPP	PPP	PPP	

P = Planting
H = Harvesting
T = Transplanting
X = Harvesting for seeds
N = Nursery
S = Setting plants

CALENDAR FOR THE PLANTING AND HARVESTING OF AGRICULTURAL CROPS

Crops \ Months	Jan.	Feb.	March	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Forages												
Alfalfa				PPP	PPP	PPP				HHH	HHH	
Panicum		XXX	XXX	XXX					PPP	PPP XXX	XXX	XXX
Elephant Grass									TTT	TTT		
Pangola Grass									TTT	TTT		
Ramirez Grass		XXX	XXX						PPP	PPP		
Rojas Grass		XXX	XXX						PPP	PPP		
Salinas Grass		XXX	XXX	XXX					PPP	PPP XXX	XXX	XXX
Setaria Grass	XXX		XXX						PPP	PPP		

P = Planting
H = Harvesting
T = Transplanting
X = Harvesting for seeds
N = Nursery
S = Setting plants

CALENDAR FOR THE PLANTING AND HARVESTING OF AGRICULTURAL CROPS

Crops \ Months	Jan.	Feb.	March	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Fruit Trees												
Avocado (5th year)			HHH	HHH	HHH	HHH	SSS HHH	SSS	SSS			
Banana tree (18 Months)	HHH	Export. HHH	HHH	HHH	HHH			SSS	SSS HHH	SSS HHH	HHH	HHH
Coffee tree				SSS	SSS HHH	HHH	HHH					
Citrus (5th year)				HHH	SSS HHH	SSS HHH	SSS HHH	(late orange) HHH	HHH	HHH		
Strawberries				SSS	SSS		HHH	HHH	HHH	HHH		
Papaya (1st year)			HHH	HHH	HHH	HHH	SSS HHH	SSS	SSS			
Mangoes (5th year)	HHH						SSS	SSS	SSS		HHH	HHH
Pineapple (2nd year)	HHH						SSS	SSS				HHH

P = Planting
H = Harvesting

T = Transplanting
X = Harvesting for seeds

N = Nursery
S = Setting plants

PRINCIPAL TILLAGE AND LIVESTOCK ACTIVITIES IN THE FOUR DEPARTMENTS OF CENTRAL PARAGUAY

Central Departments		Cotton	Sugar-Cane	Corn	Mandioca	Tobacco	Onions	Cane for Mo-lasses	Bitter Orange	Pine-apple	Cattle	Pigs	Chickens
CORDILLERA	Area	11,500	75	17,200	9,000	1,900	316	2.460	4,803,400	6,523.500	201,900	70,200	93,100
	000s Tons	10.775	520	19.625	98.622	2.349	1.296	74.636	No. of Trees	No. of Plants	Number	Number	Number
GUAIRA	Area	4,500	12.790	14,300	8,800	1,600	289	378	45,600	151,400	156,100	88,300	130,500
	000s Tons	4.223	554.179	18.147	127.961	969	1.332	14.424					
CAAGUAZU	Area	16,900	388	26,100	12,400	6,800	1.013	182	305,700	652,300	162,300	112,900	123,300
	000s Tons	19.232	16.819	32.599	265.348	8.514	8.676	3.234					
PARAGUARI	Area	22,200	2.400	33,700	13,800	1,500	1.175	2.971	882,400	9,075,900	431,400	104,700	145,400
	000s Tons	19.995	77.642	40.311	180.352	1.826	8.078	101.109					

PROJECT NUMBER: 526011

PROCESS: ACTION

CATALOGUE ✓ ILC

ABSTRACT ✓ ILC

NOTE

COMMENTS:

D:

526-111

DEC 15 1976

INFORMATION MEMORANDUM FOR THE ASSISTANT ADMINISTRATOR (LA)

FROM: LA/DR, Charles B. Weinberg

SUBJECT: Issues Paper - Paraguay Rural Roads Interim Report

A DAEC meeting has been scheduled for Thursday, December 16, at 9:30 a.m., to review the Interim Report for the $4.3 million FY 1977 Rural Roads Loan to Paraguay.

The project was originally part of the FY 1977 Small Farmer Subsector Loan. When the PRP was reviewed by the DAEC on December 17, 1975, only the rural roads component was approved for further development. The subject Interim Report was requested in order to detail the implementing mechanisms and institutional capabilities required to effectively implement the project.

The purpose of the project is twofold: (1) establish an efficient system for constructing, upgrading and maintaining rural roads, and (2) carry out construction, upgrading and maintenance of rural roads which will contribute to the goal of increasing the income and productivity of the Paraguayan Small Farmer. Machinery for road building and maintenance, spare parts, construction materials, hand tools, technical assistance and studies will be financed with project funds. The GOP contribution will include operating costs and maintenance of machinery, labor, and certain engineering and supervisory costs. The Borrower will be the Ministry of Public Works and Communication (MOPC) and the General Directorate of Road Committees (GDRC) will be the implementing agent.

The DAEC will discuss the following issues and points of clarification:

(1) Project Strategy (Issue)

Within the MOPC, the General Directorate of Roads (DR) is responsible for the national roads system and maintenance of road equipment, whereas the GDRC is a parallel directorate responsible for rural roads. Currently, the GDRC has a small staff and a few pieces of equipment which it coordinates among the other levels of the road committee system (Regional Road Committees - RRCs, and Local Road Committees - LRCs).

RECORD COPY

The Interim Report indicates that the two directorates cannot be merged into one without changing current legislation (most likely a lengthy proposition). Thus, as presently designed, the project will build up the capacity of the GDRC by developing its administrative and technical capability to manage the rural roads program, with the expectation that the DR and GDRC will eventually merge into one unified organization. In considering the proposal, the DAEC will examine (a) the advisability of the Mission's strategy of building up the GDRC as a parallel organization to the DR if it is considered important that the two be merged into one system; (b) whether it would be sensible to build up the institutional capability of the GDRC as a separate organization independent of the DR; or (c) whether the strategy should be to defer the proposed assistance until a satisfactory integration of the two organizations could be agreed upon.

(2) Institutional Capability (Issue)

A. In the present roads committee system, the GDRC has a small staff and the RRCs are essentially "one man shows," including control over the selection of LRC presidents. Under the project, the various levels of the system will be upgraded and receive a greater degree of responsibility. The key link in the system is expected to be the RRCs which will make decisions on which roads to construct, improve and maintain. The DAEC will discuss the rationale for dispersing the decision-making process among the RRCs and whether RRCs will have the ability to perform the economic analysis necessary to establish which sub-projects meet the eligibility criteria.

B. With regard to the increased responsibilities anticipated for each level of the roads committee system, the DAEC will discuss the specific role each committee level will have, including the nature of the analysis to be employed in appraising possible sub-projects, and the staff increases and improvements necessary to carry out the project effectively. The DAEC also will examine the availability of the technical staff required by the expanded responsibilities, and whether a technical assistance component should be included in the project design to assure the availability of the required technical expertise.

(3) Budget Implications and GOP Support (Issue)

A. As the Interim Report points out, the changes called for by the proposed project will require a significant increase in GOP budget support for the GDRC. The DAEC will examine the availability of this budget support

as an indication of the GOP priority for rural roads.

B. With the expanded responsibilities at all levels of the roads committee system, funding requirements at the RRC and LRC levels will increase. These committees are currently dependent upon collection of road conscription fees for their funds, and it is not clear this method of funding will be sufficient once expanded responsibilities are added. The DAEC will discuss whether the GOP budget will include provisions for providing funding to cover increased costs to these committees.

C. With regard to the road conscription fee as a method for financing the RRCs and LRCs, the DAEC will also examine the efficiency of the conscription method, whether it is workable on a national level as opposed to the current local and regional levels, and whether any changes should be contemplated as a means of improving it as a revenue generating system.

(4) Mission Involvement

The Interim Report outlines several "monitoring" responsibilities which will directly involve the Mission in project activities at all levels of the roads committee system. The DAEC will seek to distinguish between the extent to which the Mission should be directly involved in project activities and the extent to which the Mission should be involved in project monitoring.

(5) Borrower and Implementing Agent

The MOPC has been identified as the Borrower under the loan with the GDRC the implementing agent. The DAEC will discuss the rationale for the MOPC as Borrower rather than the GOP, and the GDRC as implementing agent rather than the MOPC.

526-111

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

LA/DR -IEE-78-6

ENVIRONMENTAL THRESHOLD DECISION

Location : Paraguay

Project Title : Rural Roads

Funding : $5.2 million loan

Life of Project : Four years

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 Coy
Assistant Administrator
for Latin America

Jan 23 1978
Date

Clearances:
DAEC Chairman:MDBrown SB
LA Environmental Coordinator:ROOtto ROO

RECORD COPY

Initial Environmental Examination

Project Location: Paraguay

Project Title: Rural Roads Loan

Funding: FY 78 $5.2 million

Life of Project: 4 years

IEE Prepared by: Weyburn D. Davies
SER/ENGR/E&S, AID/W.

Date December 13, 1977

Environmental Action Recommended:

It is recommended that a negative determination be made for this project. Based on careful observation and analysis of conditions the proposed action will have no significant detrimental effects on the physical or socio-cultural environment, and is, therefore, an action for which neither an environmental assessment (EA) nor an environmental impact statement (EIS) as defined in AID regulation 16, will be required.

Concurrence: _____ Date Jan. 4, 1978
Mission Director, USAID/Paraguay

Assistant Administrators Decision

I. EXAMINATION OF THE NATURE, SCOPE AND MAGNITUDE OF ENVIRONMENTAL IMPACTS

DESCRIPTION OF THE PROJECT

A. General: The project has the development goal of increasing the income of small farmers in Paraguay. The purposes of the project are twofold:(1) to improve farm to market roads in selected minifundia areas; and (2) to improve the capability of Paraguayan institutions to construct, improve, and maintain rural roads. Road improvements will be made where they can be shown to contribute to the development goal of increasing small farmer income and, hence, well-being through providing better and less expensive access to markets and the benefits of existing social services.

The project will be carried out in the minifundista areas (areas of small, multi-cropped farms) in the departments of Cordillera, Paraguarí, Guairá and Caaguazú, all located to the southeast of the capital city of Asunción.

It is estimated that the project will construct or improve 1400 kilometers of rural roads in the project area over the four year operating life of the project. Primary emphasis will be on improving existing roads by removing bottlenecks such as areas subject to flooding or erosion through the construction of bridges and/or culverts, and making necessary cuts and fills, etc. The widening and reshaping of existing cart tracks and cart trails which extend off the main rural

routes for several kilometers is also included. Very little new road construction is contemplated and then only for realignment and for bypassing certain bottleneck areas.

Training of Paraguayan nationals for staffing key positions in the Department Regional Road Committees (RRC) is also programmed.

The bulk of the funds for this project will be used to purchase the necessary machinery (graders, bulldozers, trucks, etc.), supporting and maintenance equipment and hand tools to make the project a viable mix of machine and labor intensive construction and maintenance.

B. Geography, Geology and Topography of the Project Area: The project area is generally one of gently rolling terrain interspersed with small but relatively rugged hills. There are some relatively flat areas along valley floors. Slopes in the hilly areas are relatively steep in places and farming is done on hillside or hilltop natural benches. Little or no terracing is evident; however, contour planting is used for row-crops where any degree of slope is encountered.

Outcroppings of soft sandstone are the prevalent rock formations and these are limited to the hill areas.

Soils generally vary from sandy to sandy-loam in nature with some heavy clay areas in the lower valley floors.

Habitation Patterns: Farms in the project area vary in size from one to twenty (1-20) hectares in area with about 50% ranging from 1 to 5 hectares, 19-20% in the 5-10 hectare

range, about 15 to 19% in the 10-21 hectare range, and 8-10% in excess of 21 hectares. These farms face along either the existing main rural roads or the short, deadend feeder side cart trails. Almost every farm has a farmstead consisting of a house and one or more small out-buildings for animal housing or crop storage. In some cases (generally on farms over 5 hectares in size) a small agribusiness is connected to or is a part of the farmstead. The main rural roads connect small villages of from 50 to several hundred population which are located from 5 to 20 or more kilometers apart and serve as marketing centers as well as the location of schools and health clinics.

Generally, except for the villages, the rural population is scattered along the rural road system and not clustered as is the case in many LDC's.

D. Governmental Implications: This project, which is designed as an optimal mix of machine and labor-intensive construction and maintenance activity, is ideally suited to the governmental organizational structure for rural road construction and maintenance which exists in Paraguay. This is based on a conscription law which requires every able-bodied male between ages twenty and fifty to work a fixed number of days per year (maximum 6) on rural roads or make a cash payment based on current wages in lieu of labor. Organizationally the system is very loosely administered by the General Directorate of Roads Committees (GDRC) at the National

205

(Ministry) level, through Regional Roads Committees (RRCs) at the Department level, and then through voluntary Local Roads Committees (LRCs) at the operating level. Members of both the LRCs and the RRCs are locally selected or appointed and hence exemplify a high degree of local participation.

IDENTIFICATION AND EVALUATION OF ENVIRONMENTAL IMPACTS

Note: In surveying the real and/or potential impacts of this project, both beneficial and detrimental impacts were taken into consideration. These are indicated on the Impact Identification and Evaluation form (attached) with either a plus or a minus sign.

A. Land Use: In general, little change in land use patterns will occur as a result of this project. What may change somewhat is the amount of land under cultivation. If the project succeeds in improving farm to market transportation and hence in the raising of prices to farmers for marketable crops, some land which is presently not cultivated may be added. These lands are presently uncleared or used primarily for pasturage. Due to other constraints (e.g., labor shortages), however, the amount of new lands put under cultivation will still be limited.

1. Changing the character of the land through:

a. Increasing the population - This is not expected since the population in the project area has been slowly decreasing for some time. Outmigration has historically characterized the project area due to low incomes on farms and job opportunities in nearby Brazil and Argentina.

This, coupled with the opening of new lands for settlement along the eastern borders with Brazil and in the northern (Chaco) regions has been the basic reason for population loss in the project area. It is expected that in the long term the project activity may help to stabilize populations through providing better income and access to social benefits such as schools and health facilities.

b. Extracting natural resources - This would be limited to more intensive land cultivation methods and subsequent soil nutrient depletion. Very intensive methods will require fertilizers to overcome this. Wood-cutting on hill forests may increase slightly, but since these forests are all second growth timber, there are no commercial grade tree stands in the project area and wood cutting is limited to that used directly for fuel and charcoal.

c. Land clearing - The only land clearing which will result from the project will be that required for road-bed widening and necessary rights-of-way. Rights-of-way of 20 meters are contemplated and in most cases exist on all roads in the project area with the possible exception of the small feeder cart tracks. Total right-of-way hectarage for all 1400 kilometers considered for improvement amounts to only 2,800 hectares of which less than 800 is estimated to be required for any necessary widening operations.

2. Altering natural defenses: No foreseeable consequences.

3. Foreclosing important uses: No foreseeable consequences.

4. Jeopardizing man or his works: No foreseeable consequences.

5. Other factors concerning land use: There do not appear to be any other known factors which would affect land use with one large exception: That exception is erosion and erosion control. As planned, the project proposes to reshape and where necessary, reroute roads to obtain a best possible condition concerning slopes, curve radii, etc. These improvements will tend to mitigate or eliminate conditions in the present road system which lead to extreme erosion problems in many areas. Along with proper slopes and shaping, water velocity control devises such as rip-rapping and sodding are specified for drainage ditches where slopes are great enough to permit scouring velocities of run-off. This aspect of the project has the decided secondary benefit of providing a controlled drainage system, not only for road rights-of-way, but for surrounding farmlands.

B. Water Quality:

1. The physical state of water will be little changed but there will be some extra burden of silt, at least for a period immediately after construction and repair of road sections due primarily to the removal of plant cover in widening and rerouting operations. This effect would only be temporary, however, since natural vegetation would soon recover in the

denuded areas (with the exception of actual road-bed). This also would be somewhat balanced out by the controlled run-off structures to be included (see 1.,d., "erosion control," above) in the engineering specifications.

2. No other significant changes in water quality can be ascertained.

C. Atmospheric:

1. Air additives: There will be some increase in dust generation during construction and maintenance operations but this will be minimal and of short duration. Dust generation will be minimal at all times since the soils are generally quite sandy and little dust is generated when they are disturbed. Increased traffic expected as a result of road improvements should, therefore, create little increase in dust production.

2. Air pollution: It will only slightly increase due to increased traffic. Most larger trucks are diesel powered and this will also lead to some minimal increase in smoke production. The relatively pristine quality of the air in the rural areas and the prevailing winds and frequent showers, especially in the growing (and marketing) season should provide for sufficient dilution and wash-out so as to make any increases almost undetectable.

3. Noise pollution: Again, minimal and would be due solely to the passage of heavy trucks during crop marketing times only. Otherwise there should be little measurable increase from present levels.

D. Natural Resources:

1. There will be no altered use of water as a result of the project activities.

2. There are no irreversible, irrecoverable or inefficient committments of natural resources contemplated in the project.

E. Cultural:

1. Altering physical symbols: Since roads within the project will almost always follow existing rights-of-way and commonly traveled routes, there will be no disturbance of cemeteries, shrines, churches or other cultural sites entailed in the project. Where diversions of short stretches of road are contemplated, project managers will ascertain that no such symbols will be disturbed.

2. Dilution of cultural tradition: Since the Paraguayan rural culture is highly oriented on extended family lines, there should be little or no dilution of this tradition. A possible secondary benefit may be the strengthening of this tradition by making out-migration from the area comparatively less desirable.

3. Changes in family structure: See item 2., above.

F. Socioeconomic:

1. Changes in economic/employment patterns: One of the primary benefits expected of the project is that there will be an increase in disposable farm income due to a large number of possible factors including a decrease in transportation costs and an increase in time savings.

No change in types of employment within the area is anticipated but it is expected that on-farm employment may rise in numbers due to the diminution of out-migration and the potential increase in land put under cultivation.

2. Changes in cultural patterns: Change in cultural patterns which have been developing in recent years with the out-migration of young people seeking greater opportunity in the more populous areas should slow down with the result of stabilizing population shifts and fortifying the traditional extended family system.

3. Changes in population patterns: Changes in transport availability may lead to some development of cross-roads marketing and pick-up points as well as concommitant development of small agri-businesses and service businesses (coffee-houses, etc.). This should be minimal at most and represents neither a positive nor negative significant impact on the environment.

G. Health:

1. Changing a natural environment: No significant impacts are expected.

2. Eliminating an ecosystem element: No natural ecosystem elements will be eliminated and very little disturbance will be created by the removal of cover plants along rights-of-way.

3. Other: Changing an existing man-made environment - Malaria appears to be the only water related disease in Paraguay which can be connected with the project activity

of upgrading and constructing rural roads. The project should have little effect on the incidence of this disease and effects of any magnitude must be positive. Improved ditching and run-off structures (culverts, bridges, etc.) should eliminate most of the pooling of water in rights-of-way and adjacent lands which now exist. These presently serve as temporary mosquito breeding areas and may contribute to the incidence of the disease. Additionally, improved roads will allow for better scheduling of spray crews and surveillance personnel for both case detection and distribution of anti-malarial drugs.

Borrow areas for material to be used for raising road elevations and for stabilizing soils will be so used to prevent pooling or ponding of waters in them. Most required borrow material will be obtained from the drainage ditches as they are shaped by construction/maintenance activity.

Other health conditions should be improved or have the opportunity to be improved with improved ingress and egress of the rural community. Health stations and other such health care facilities will become more accessible to the rural population through improved roads with the concommitant increase of traffic. The rural population will become more accessible to specialized health teams (i.e.: malaria spray teams) and their services.

H. General:

1. There are no international environmental impacts foreseen.

2. There are no impacts of a controversial nature foreseen.

3. There are no larger program impacts of a detrimental nature foreseen.

4. Other factors: According to available data and knowledge, there are no known endangered species of either flora or fauna presently native to the project area. In any event, the government of Paraguay has recently banned all big-game hunting in the country and, if it were necessary, the project activity could only assist in the enforcement of such a ban in the project area and any subsequent projects of a similar nature.

I. Other Possible Impacts:

None are foreseen.

Note: All statistical data as to farm size, distribution, etc. given in this report was taken from the publication, Small Farm Sub-Sector Assessment & Constraints Analysis assembed and published by USAID/Paraguay, August 1976.

II. RECOMMENDATION FOR ENVIRONMENTAL ACTION

Data search, interviews and field observation indicate that little or no significant detrimental environmental impact will result from this project and that some beneficial impacts would be forthcoming.

Therefore, it is recommended that no Environmental Assessment (EA) or Environmental Impact Statement (EIS) will be required. Further it is recommended that a negative determination be made.

IMPACT IDENTIFICATION AND EVALUATION FORM

Impact Areas and Sub-areas 1/	Impact Identification and Evaluation 2/
A. LAND USE	
1. Changing the character of the land through:	
a. Increasing the population	L +
b. Extracting natural resources	L +
c. Land clearing	L -
d. Changing soil character	N
2. Altering natural defenses	N
3. Foreclosing important uses	N
4. Jeopardizing man or his works	N
5. Other factors	
Erosion of land	M +
B. WATER QUALITY	
1. Physical state of water	L -
2. Chemical and biological states	N
3. Ecological balance	N
4. Other factors	

1/ See Explanatory Notes for this form.

2/ Use the following symbols:
N - No environmental impact
L - Little environmental impact
M - Moderate environmental impact
H - High environmental impact
U - Unknown

C. ATMOSPHERIC

1. Air additives ---------- L -
2. Air pollution ---------- L -
3. Noise pollution ---------- L -
4. Other factors

_____ _____

_____ _____

D. NATURAL RESOURCES

1. Diversion, altered use of water ---------- N
2. Irreversible, inefficient commitments ---------- N
3. Other factors

_____ _____

_____ _____

E. CULTURAL

1. Altering physical symbols ---------- M
2. Dilution of cultural traditions ---------- N
3. Other factors

Changes in family structure _____ L +

_____ _____

SOCIOECONOMIC

1. Changes in economic/employment patterns ---------- M +
2. Changes in population ---------- L +
3. Changes in cultural patterns ---------- L +
4. Other factors

Changes in population patterns _____ L

G. HEALTH

1. Changing a natural environment ---------- N

2. Eliminating an ecosystem element ---------- N

3. Other factors

Changing an existing man-made environment M +

_____ _____

H. GENERAL

1. International impacts ---------- N

2. Controversial impacts ---------- N

3. Larger program impacts ---------- N

4. Other factors

Endangered species N

_____ _____

I. OTHER POSSIBLE IMPACTS (not listed above)

_____ _____

_____ _____

_____ _____

Note: Impact ratings have been given a (+) or (-) value depending on the raters knowledge of whether the impact will generally be of a beneficial (+) or detrimental (-) nature.

See attached Discussion of Impacts.

217

526-111

INFORMATION MEMORANDUM FOR THE ASSISTANT ADMINISTRATOR (LA) JAN 18 1979

FROM: LA/DR, Marshall D. Brown (Acting)

Subject: Issues Paper - Paraguay Rural Roads PP

A DAEC meeting has been scheduled for Thursday, January 19, at 2:30 p.m. to review the PP for the $5.2 million FY 1978 Rural Roads loan to Paraguay.

The inadequate rural roads system in Paraguay is a major factor limiting the development of the small farm sector. The purpose of the project is to improve farm to market roads in selected small farm areas by increasing the capability of Paraguayan institutions to construct, upgrade and maintain rural roads. Beneficiaries of the project will be the 57,000 small farm families who inhabit the four departments in central Paraguay where the project will take place. The average small farmer in the target group has less than 10 hectares of land and a per capita income of $154.

Total cost of the project is $8.34 million, of which $5.2 million will be contributed by AID. Loan funds will finance road building machinery, construction materials, technical assistance and a special administrative study to determine the best institutional arrangements for constructing and maintaining all roads in Paraguay. The GOP contribution of $2,425,000 will include expenses of the new unit in the Ministry of Public Works which will be responsible for the project, operating costs and maintenance of machinery, and construction materials. Local communities will also contribute $715,000 for materials, fuel and labor. The total host country counterpart is $3.14 million (37.6%) thus satisfying the minimum contribution requirement of Section 110(a) of the FAA.

An Initial Environmental Examination has been prepared in conjunction with the PP. The Bureau's Environmental Committee has reviewed the IEE and has concurred with the Mission's recommendation for a Negative Determination.

The project was originally scheduled for authorization in FY 1977 and is not included in the FY 1978 Congressional Presentation as a new program requirement. An Advice of Program Change will therefore be required.

The DAEC will discuss the following issues:

(1) Institutional Capacity

A. Technical review of subprojects and decisions regarding the use of project resources will be the responsibility of the Regional Road

RECORD COPY

Committees (RRCs). Under the project, these committees will grow from small three-to-four person staffs to operational units of twenty-two people. In view of the increased technical and operational responsibilities of the RRCs, the DAEC will examine the time frame required to expand to this level of operation and whether the timing proposed in the project will be adequate for this purpose.

B. Each RRC will have a director who will also be the technical expert. In the PP, this individual is described as a surveyor who will have a wide range of responsibilities: economic analysis of candidate roads, surveying, engineering, logistical programming of equipment and training. Given the critical role of the RRC directors and the objective of improving the technical capacity of RRCs, the DAEC will examine the likelihood that satisfactory candidates exist with these required skills. The DAEC will also review the qualifications for the other staff positions proposed for each RRC.

C. At the national level, a new office, Caminos Vecinales (CV), will be established in the Ministry of Public Works (MOPC) to administer the project. CV will also provide technical assistance to the RRCs and Local Road Committees (LRCs), and a special assistant to the director of CV will perform this function. In the PP, this position is alternately described as an economist and a training specialist. These would appear to be two distinct functions. In view of the importance of economic analysis in the effective functioning of CV's role in the project, the DAEC will discuss the role of the special assistant and its relationship to the training requirements of the project. The DAEC will also discuss the proposal of a sociologist as the long-term advisor to CV, and the ability of a sociologist to provide the economics training required by the project.

(2) Subproject Selection Criteria

Six criteria are presented in the PP which a road must meet in order to be eligible for improvement. Only one deals specifically with impact on the target group, and it does so only in general terms. The DAEC will discuss the adequacy of these general criteria for ensuring that the project will maximize impact on the AID target group.

(3) Financial Analysis

A. Local communities will contribute both cash and labor to the project through the existing conscription service. Possible shortfalls have been projected for the cash contributions due, in part, to deficiencies in conscription collections. The DAEC will review the adequacy of the cash contribution from communities and discuss the need to add a condition precedent to improve conscription collections.

B. Projections for labor indicate that there will be a more than adequate supply. Reference is made in the PP, however, to small farmers facing a problem of labor shortages. The DAEC will discuss the availability of local labor to work on the roads and whether this might prove to be a serious constraint to project implementation.

(4) Economic Analysis

A 5% increase in total farm income is expected as a result of the proposed project. However, the analysis is not clear on what factors will be contributing to this increase in income -- e.g., increased land under cultivation, increased yields, shift in cropping patterns, etc. The DAEC will review the basis on which this increase in income is expected.

(5) Administrative Study

A comprehensive study of the institutional responsibilities for roads in Paraguay will be undertaken following the second year of the project. The objective of the study is to recommend the most appropriate structure for administering all roads in Paraguay without distinction between national or rural roads. The DAEC will examine the proposed composition of the team expected to undertake the study.

(6) Equipment Maintenance

A considerable amount of road construction equipment will be procured under the project yet little provision has been made for its maintenance. It is expected that the Directorate of Roads (DR) will take on the maintenance responsibility since it has developed a strong capability in this area through assistance from the IBRD. DR, however, is expecting a new IBRD loan which will also include a considerable amount of equipment, thus necessitating close coordination with the IBRD requirements of this project. The DAEC will examine what assurances the Mission has that DR will be able to assume this responsibility. The DAEC will also examine the adequacy of the projected increase in DR maintenance personnel to service the equipment of this project and the IBRD project.

(7) Procurement Arrangements

Loan funds will finance the procurement of a significant amount of road equipment. It is expected that the equipment will be purchased in two traunches through the procurement office of the Directorate of Roads (DR). The DAEC will review the arrangements to be established for this procurement, including the types of equipment to be procured in each traunch and how the equipment will be distributed among the four project departments. The DAEC will also discuss the capacity of DR to carry out the procurement.

526-111

JAN 1 1978

NOTE TO: DAA/LA, Edward Coy

SUBJECT: DAEC Review for the Paraguay Rural Roads and Market Town Development Project Papers

As you know, the Paraguay Mission is in the final stages of preparing the two subject loan projects for submission and authorization. DAEC reviews have been scheduled for January 17 (Rural Roads) and January 19 (Market Town Development), and Abe Pena is currently planning to travel to Washington to participate in the project reviews.

Recently, concern has been expressed as to whether this is the appropriate time to review the projects in light of the Ambassador's position on the human rights situation in Paraguay (see TAB B). While these concerns are legitimate, I believe that review of the projects should proceed as currently planned.

Approximately six weeks ago, at the Bureau's request, the Mission began an intensive effort to accelerate development of the projects for mid-January submission to permit obligation of funds early in the fiscal year. This effort has involved most personnel within the Mission, taking them away from their normal duties and pressing them into full-time service at the expense of those other duties. To complete the papers in accordance with the new submission schedule, it was necessary to cancel the leaves planned by several staff members for the holiday period. The Bureau has also contributed considerable support to the completion of the projects -- in December, five LA/DR staff members were on TDY in Paraguay to assist with project development. Also, SER/ENGR and TA/UD each provided one staff member to the effort. Finally, a three-member contract team was in Paraguay from mid-November to mid-December working on the Market Town project.

After this effort by the Mission to complete the projects, any significant delay in the review dates now scheduled would be a severe blow to Mission morale, which is already at a very low level. Furthermore, going forward with the reviews as scheduled will put us in a position of being able to move forward to authorization and signature of project agreements, with minimal time loss, should the human rights issues which are the basis of the Ambassador's position be resolved. This is particularly important given the additional time requirements imposed by the new procedures established for obligating loan funds.

I recommend that the Rural Roads and Market Town Development PPs be reviewed as scheduled and that you approve Abe Pena's travel to Washington by signing the attached cable (TAB A).

LA/DR, Charles B. Weinberg

CONFIDENTIAL
(UNCLASSIFIED WITHOUT TAB B)

Attachments: TAB A - Cable to Asuncion
TAB B - Asuncion 5232

[redacted]

UNCLASSIFIED

Department of State

INCOMING TELEGRAM

526-111

LA/DR D-8 HANSAN

PAGE 01 ASUNCI 02306 071341Z 3401
ACTION AID-59

INFO OCT-01 EB-07 IGA-02 /069 W
----------071342Z 097786 /44

P 071300Z JUN 77
FM AMEMBASSY ASUNCION
TO SECSTATE WASHDC PRIORITY 0307

UNCLAS ASUNCION 2306

AIDAC

E.O. 11652: N/A
SUBJ: FY 1977 LOAN SUBMISSION SCHEDULE

REF: STATE 127336

ADVANCE ACTION COPY

1. MISSION HAS MADE MUCH PROGRESS IN DEVELOPMENT OF RURAL ROADS PROJECT. NONETHELESS, A RALISTIC ASSESSMENT INDICATES THAT PROJECT WILL NOT BE READY FOR FY 1977 SUBMISSION. MISSION DOES NOT FEEL CONFORTABLE YET WITH INSTITUTIONAL ARRANGEMENTS, PARTICULARLY THE COORDINATION BETWEEN THE DIRECTORATE OF ROADS AND THE GENERAL DIRECTORATE OF ROAD COMMITTEES. ALSO, CONSIDERABLE WORK REMAINS TO BE DONE ON ECONOMIC ANALYSIS AND RELATED SUBPROJECT SELECTION CRITERIA. SOME QUESTIONS STILL REMAIN UNRESOLVED IN THE TECHNICAL AND FINANCIAL SPHERES, WHICH INTERRELATE CLOSELY WITH THE INSTITUTIONAL AND ECONOMIC SPHERES. IN THE INTEREST OF DEVELOPING A WORKABLE PROJECT AND ONE THAT WILL HAVE MAXIMUM LONG-TERM DEVELOPMENTAL IMPACT, MISSION REQUESTS THAT IT BE ALLOWED TO SUBMIT THIS PROJECT IN FY 1978.

2. MISSION CONCURS IN JULY 22 DATE FOR DAEC REVIEW OF MARKET TOWN DEVELOPMENT LOAN. PP IS IN FINAL STAGES OF DRAFTING AND WILL BE REVIEWED BY MISSION AND IDM. MISSION EXPECTS TO POUCH PP NLT JULY 11.

3. MISSION DIRECTOR PENA AND ASSISTANT CAPITAL DEVELOPMENT OFFICER HIRSH WILL REPRESENT MISSION AT MARKET TOWN DAEC REVIEW. MISSION WOULD APPRECIATE YOUR PROMPT CONCURRENCE SO TRAVEL PLANS CAN BE MADE.
LANDAU

REFTEL (E)

77 JUN 13 40

UNCLASSIFIED

Department of State

OUTGOING TELEGRAM

INFO OCT-01 EB-08 IGA-02 /042 R

DRAFTED BY LA:DRANKEL:GAM
APPROVED BY AA/LA:ENGL AND 11
LA/DR:CEINBERG HDEFOWN
LA/DR:JSMCDONALD HAHSAN
LA/DR:BSELDEN EDFEENS(DRAFT)
LA/DR:ADCHIDICK(DRAFT)
LA/DR:HMARWITZ(DRAFT)
CC/LA:JHESSLER:LMSALERLANTYGE(DFT)
FPC/DFEE:JARTALO(DRAFT)
SER/ENGR:CSTEVENS(DRAFT)
----------221136Z 018174 /18

R 221845Z JAN 77
FM SECSTATE WASHDC
TO AMEMBASSY ASUNCION

UNCLAS STATE 014576

AIDAC

E.O. 11652: N/A

TAGS:

SUBJECT: DAEC REVIEW - RURAL ROAD INTERIM REPORT

SUBJECT INTERIM REPORT WAS REVIEWED BY THE DAEC ON DECEMBER 16, AND INTENSIVE REVIEW WAS APPROVED SUBJECT TO THE GUIDANCE OUTLINED BELOW:

1. PROJECT STRATEGY - APPROPRIATENESS OF PROJECT STRATEGY TO BUILD UP THE SMALL GDRC ORGANIZATION WITH THE EXPECTATION THAT IT WILL EVENTUALLY MERGE WITH THE DR INTO A SINGLE ORGANIZATION WAS QUESTIONED DURING REVIEW. INABILITY TO OBTAIN A MERGER AT TIME WHEN THE GDRC IS SMALL IMPLIES MERGER WOULD BE EVEN MORE DIFFICULT ONCE GDRC HAS BEEN STRENGTHENED. HOWEVER, GIVEN THAT MERGER OF THE TWO ORGANIZATIONS IN THE LONG RUN IS THE ONLY LOGICAL SOLUTION TO AN EFFECTIVE INSTITUTIONAL MECHANISM FOR RURAL ROADS IN PARAGUAY, PROJECT STRATEGY SHOULD BE SUCH THAT IT ENHANCES PROSPECT FOR MERGER. TOWARD THAT END, PROJECT DESIGN SHOULD LIMIT THE AUTHORITY OF GDRC TO THE SELECTION OF RURAL ROADS (THROUGH THE RURAL ROAD COMMITTEE PROJ STRUCTURE) AND SHOULD ALSO FOCUS ON THE IMPROVEMENT OF THE GDRC'S ASSESSMENT AND COLLECTION PROCEDURES UNDER THE FEE CONSCRIPTION SYSTEM, INCLUDING ACCOUNTABILITY OF FUNDS

COLLECTED. ONCE ROADS ARE SELECTED AND PRIORITIES SET BY THE GDRC, THE DR SHOULD BE ENTRUSTED WITH THE DESIGN, CONSTRUCTION, AND MAINTENANCE PLANNING AND SUPERVISION OF THESE ROADS. ALL PROJECT EQUIPMENT, WITH THE EXCEPTION OF SOME SUPPORT VEHICLES, SHOULD BE PLACED WITHIN THE DR WHERE EQUIPMENT SERVICE AND MAINTENANCE CAPABILITY ALREADY EXISTS. MEANS SHOULD BE PROVIDED TO ASSURE THIS EQUIPMENT IS USED ONLY FOR PROJECT PURPOSES AND NOT INCLUDED WITH REST OF DR EQUIPMENT. THE NEWLY ESTABLISHED RURAL ROAD COMMISSION WOULD OVERSEE THIS DIVISION OF LABOR AND COORDINATE INPUTS AS ENVISIONED IN THE INTERIM REPORT.

2. INSTITUTIONAL ANALYSIS - THE INCREASED RESPONSIBILITIES ANTICIPATED AT EACH LEVEL OF THE RURAL ROADS SYSTEM WILL REQUIRE INCREASED TECHNICAL CAPABILITY OF THE CORRESPONDING STAFF (PROFESSIONAL AND SKILLED LABOR). THE PP SHOULD INCLUDE INSTITUTIONAL ANALYSES OF BOTH THE GDRC AND DR (WITHIN THE FRAMEWORK OF THEIR RESPONSIBILITIES UNDER THE PROJECT STRATEGY) DETAILING THEIR CURRENT CAPABILITY AS WELL AS EXPECTED NEW REQUIREMENTS BASED ON THE ANTICIPATED MAGNITUDE AND TYPE OF WORKLOAD. THE DR ANALYSIS SHOULD ALSO FOCUS ON DEGREE TO WHICH ITS

CAPABILITY WOULD NEED UPGRADING IN ORDER TO PROVIDE ADEQUATE SERVICE AND MAINTENANCE TO ITS CURRENT EQUIPMENT POOLS AS WELL AS ADDITIONAL EQUIPMENT TO BE PURCHASED UNDER THE LOAN FOR THE CONSTRUCTION AND MAINTENANCE OF RURAL ROADS. THE ANALYSES FOR BOTH ORGANIZATIONS SHOULD INCLUDE STAFFING REQUIREMENTS AND ELIGIBILITY CRITERIA FOR FILLING POSITIONS. IN ADDITION, FINAL PROJECT DESIGN SHOULD ADDRESS THE NEED FOR ADDING A TECHNICAL ASSISTANCE COMPONENT (NATURE OF TA REQUIRED, ETC.) TO UPGRADE CURRENTLY AVAILABLE SKILLS. ASSISTANCE FROM CONSULTING FIRMS/CONTRACTORS TO FILL GAPS SHOULD BE CONSIDERED. THE PP SHOULD ALSO DISCUSS POSSIBLE EFFECT OF JOINT PARAGUAY BRAZIL HYDROELECTRIC PROJECT DRAWING TRAINED PERSONNEL AWAY FROM PROPOSED PROJECT.

3. ROADS COMMITTEE SYS.
-----A. INTENSIVE REVIEW SHOULD ELABORATE ON "GRASS ROOTS" ROADS COMMITTEE SYSTEM OUTLINED IN INTERIM REPORT. PARTICULAR ATTENTION SHOULD BE GIVEN TO THE RRC'S, WHICH ARE IDENTIFIED IN THE INTERIM REPORT AS THE KEY LINK IN THE RURAL ROADS SYSTEM AND ARE EXPECTED TO BE PRINCIPAL DECISION-MAKING BODIES IN RURAL AREAS. GIVEN IMPORTANCE OF RRC'S ROLE, FINAL PROJECT DESIGN SHOULD CONSIDER AN RRC MEMBERSHIP STRUCTURE WHICH INCLUDES REPRESENTATIVES OF GOP AND PRIVATE AGENCIES CONCERNED WITH RURAL SMALL FARMERS (E.G., MINISTRY OF AGRICULTURE EXTENSION AGENTS, BANK OFFICIALS, ETC.).
-----B. WITH THE INCREASED RESPONSIBILITIES TO BE ASSIGNED TO THE SYSTEM, IT IS ALSO EXPECTED THAT FUNDING REQUIREMENTS WILL INCREASE. FOR EACH OF THE FIVE RRC'S IN THE PROJECT AREA, THE PP SHOULD INCLUDE A THOROUGH ANALYSIS OF THE ANTICIPATED MAGNITUDE OF THE INCREASED FUNDING REQUIREMENT, THE AVAILABILITY AND ADEQUACY OF FUNDS COLLECTED BY THE RRC'S TO MEET THE INCREASED REQUIREMENT, AND THE ACCOUNTABILITY OF THE RRC'S FOR THE FUNDS COLLECTED.
4. ROAD CONSCRIPTION FEE - REGARDING COLLECTION OF FUNDS BY THE RRC'S, THE PP SHOULD PROVIDE ADDITIONAL INFORMATION ON HOW THE ROAD CONSCRIPTION SYSTEM WORKS AND WHERE IMPROVEMENTS MIGHT BE MADE. AN ANALYSIS OF THE RELIABILITY OF THE CONSCRIPTION SYSTEM -- GIVEN THE INCREASED FUNDING REQUIREMENTS DISCUSSED ABOVE -- SHOULD BE CONDUCTED WITH THE RESULTS PRESENTED IN THE PP.

5. SUB-PROJECT SELECTION CRITERIA - INTENSIVE REVIEW SHOULD IDENTIFY ECONOMIC AND SOCIAL CRITERIA WHICH WILL SERVE AS BASIS FOR APPROVING SUB-PROJECT PROPOSALS. THE PP SHOULD DETAIL THE MECHANISM CONTEMPLATED FOR APPROVING PROPOSALS AS THEY MOVE THROUGH EACH LEVEL OF THE RURAL ROAD SYSTEM AS WELL AS THE VARYING CRITERIA TO BE EVALUATED AT EACH LEVEL. IN THIS REGARD, ECONOMIC ANALYSIS OF PROPOSALS IS EXPECTED TO BE CONDUCTED BY TECHNICAL STAFF AT THE RRC LEVEL. INTENSIVE REVIEW SHOULD ADDRESS CONCERN REGARDING RELIABILITY OF ECONOMIC ANALYSIS PERFORMED AT THIS LEVEL AS WELL AS THE AVAILABILITY OF QUALIFIED PERSONNEL TO CONDUCT THE REQUIRED ANALYSIS. IN ADDRESSING AVAILABILITY OF SUCH PERSONNEL, PP SHOULD ALSO IDENTIFY ORGANIZATION WITH WHOM THEY WILL BE AFFILIATED (I.E., MOPC, RRC, CONSULTANT, ETC.).

6. APPROPRIATE TECHNOLOGY MIX - INTERIM REPORT INDICATED PROJECTS WILL BE LABOR INTENSIVE TO THE DEGREE POSSIBLE. THE PP SHOULD INCLUDE SPECIFIC CRITERIA FOR DETERMINING THE APPROPRIATE MIX OF LABOR AND CAPITAL. USE OF CONSCRIPTED LABOR WILL HAVE SIGNIFICANT ROLE IN DETERMINING APPROPRIATE TECHNOLOGY MIX AND SHOULD BE INCLUDED IN DISCUSSION OF CRITERIA SELECTED.

7. RECURRING COSTS - PP SHOULD PROVIDE BUDGET ANALYSIS INDICATING GOP ABILITY AND WILLINGNESS TO FINANCE RECURRING COSTS (E.G., EQUIPMENT REPLACEMENT, MAINTENANCE,

ETC.) LIKELY TO REMAIN ONCE AID INPUTS HAVE TERMIN

8. MISSION INVOLVEMENT - INTERIM REPORT OUTLINED MONITORING RESPONSIBILITIES WHICH WOULD DIRECTLY INVOLVE

MISSION IN PROJECT ACTIVITIES. MISSION SHOULD LIMIT ITS ROLE TO MONITORING AND PLACE FULL IMPLEMENTATION RESPONSIBILITY ON GOP.

9. OTHER DONOR COORDINATION - THE PP SHOULD INCLUDE DISCUSSION OF ROAD PROJECTS CONTEMPLATED BY OTHER DONORS (IBRD, IDB, ETC.), THE POTENTIAL IMPACT ON THE PROPOSED PROJECT, AND THE EFFORTS BEING MADE TO COORDINATE PROJECTS TO ASSURE COMPLEMENTARITY AND AVOID DUPLICATION.

10. TDY - AID/W TDY TEAM CONSISTING OF HASAN, STEVENS, SEVERN AND ERRIDA EXPECTED TO ARRIVE PARAGUAY IN LATE FEBRUARY-EARLY MARCH TO ASSIST PROJECT DEVELOPMENT. PRIOR TO TEAM'S ARRIVAL MISSION SHOULD CONDUCT STUDIES ON MECHANICS OF CONSCRIPTION FEE SYSTEM AND THE INSTITUTIONAL STRUCTURE OF BOTH THE DP AND CDPC. SER/ENGR RECOMMENDS SERVICES DAN SIGLIN, HEAVY EQUIPMENT SPECIALIST WITH 30 YEARS EXPERIENCE IN HIS FIELD, TO UNDERTAKE DP EQUIPMENT ANALYSIS. SIGLIN HAS WORKING KNOWLEDGE OF SPANISH AND IS AVAILABLE FIRST WEEK OF FEBRUARY TO CONDUCT ANALYSIS PRIOR TO TDY TEAM ARRIVAL. PLEASE CABLE SCOPE OF WORK AND FUNDING CITATION SO THAT SER/ENGR MAY PREPARE PIO/T SIGLIN SERVICES. SPECIFIC DATA REQUIREMENTS OF ECONOMISTS ON TDY TEAM WILL BE SUBJECT SEPTEL.

11. BORROWER AND IMPLEMENTING AGENT - IN PP, BORROWER UNDER THE PROJECT SHOULD BE THE GOP AND MOPC THE IMPLEMENTING AGENT.
HALIB