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UNCLASSIFIED

UNITED STATES
INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
Agency for International Development
Washington, D.C. 20523

GAMBIA RURAL ROADS MAINTENANCE PROJECT
635-0206

Project Paper
Approved June 13, 1979

UNCLASSIFIED

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT PAPER FACESHEET

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

PP

2. DOCUMENT CODE: 3

3. COUNTRY ENTITY: The Gambia

4. DOCUMENT REVISION NUMBER:

5. PROJECT NUMBER (7 digits): 635-0206

6. BUREAU/OFFICE: A. SYMBOL: AFR; B. CODE: 06

7. PROJECT TITLE (Maximum 40 characters): Gambia Rural Roads Maintenance

8. ESTIMATED FY OF PROJECT COMPLETION: FY 83

9. ESTIMATED DATE OF OBLIGATION: A. INITIAL FY 79; B. QUARTER 4 (Enter 1, 2, 3, or 4); C. FINAL FY 83

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						
(GRANT) SH	(1,495)	(5)	(1,500)	(3,990)	(754)	(4,744)
(LOAN)	( )	( )	( )	( )	( )	( )
OTHER U.S. 1.						
OTHER U.S. 2.						
HOST COUNTRY		30	30	114	265	379
OTHER DONOR(S)						
TOTALS	1,495	35	1,530	4,104	1,019	5,123

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 79 F. GRANT	E. 1ST FY 79 G. LOAN	H. 2ND FY 80 I. GRANT	H. 2ND FY 80 J. LOAN	K. 3RD FY 81 L. GRANT	K. 3RD FY 81 M. LOAN
(1) SH	220	821		1,500		800		2,300	
(2)									
(3)									
(4)									
			TOTALS	1,500		800		2,300	

A. APPROPRIATION	N. 4TH FY 82 O. GRANT	N. 4TH FY 82 P. LOAN	Q. 5TH FY 83 R. GRANT	Q. 5TH FY 83 S. LOAN	LIFE OF PROJECT T. GRANT	LIFE OF PROJECT U. LOAN
(1) SH	144		–		4,744	
(2)						
(3)						
(4)						
TOTALS	144				4,744	

12. IN-DEPTH EVALUATION SCHEDULED: MM YY 12 82

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

1 (1 = NO, 2 = YES)

14. ORIGINATING OFFICE CLEARANCE

SIGNATURE: Douglas P. Brown

TITLE: AID Operations Officer, Banjul

DATE SIGNED: MM DD YY

15. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION: MM DD YY 04 18 79

AID 1330-4 (3-76)

ACTION MEMORANDUM FOR THE ASSISTANT ADMINISTRATOR FOR AFRICA

FROM : AFR/DR, John W. Koehring

SUBJECT: Gambia Rural Roads Maintenance Project, 635-0205

I. Problem: Your authorization is required to execute a grant of One Million Five Hundred Thousand Dollars ($1,500,000) from Sahel Development Program funds (SH) to the Government of The Gambia (GOTG) for the Gambia Rural Roads Maintenance Project (635-0205) and to approve life of project funding in the amount of Four Million Seven Hundred Forty-four Thousand Dollars ($4,744,000).

II. Discussion

A. Project Description

This project is part of a multi-donor road maintenance program with financing from the World Bank and the European Community (EC) Special Action Fund. The purpose of the AID project is to improve the capability of the Public Works Department (PWD) to manage, operate, and maintain road maintenance equipment and public service vehicles. A new Central Workshop will be constructed and equipped. Technical assistance will be provided to study and make recommendations for the improvement of the PWD's equipment management and maintenance system and to assist the PWD to implement those recommendations. A training program for PWD will also be established to improve the operations of the Central and Regional Workshops. The World Bank and the EC are providing $6,700,000 to finance the purchase and operation of the highway construction/maintenance equipment in order to carry out routine or periodic maintenance of 970 km of primary and secondary roads as well as to provide associated technical assistance and training.

The project is in accordance with the Small Country Program Statement. Improved managerial and operational capability of the PWD is critical to the success of the road maintenance project to be financed by the World Bank and the EC. A large share of the users' savings resulting from better-maintained roads will accrue to GOTG ministries delivering services to the poor majority in rural areas and to private transporters engaged in moving crops and people and in distributing consumer goods in rural areas. Because of the competitive nature of this private transport sector, increases in the cost of living in rural areas will be retarded. Therefore, beneficiaries of this project include not only GOTG ministries and the PWD and its employees in particular, but also all other road users and the inhabitants of rural areas as well.

B. Financial Summary

Funding for FY 1979 and over the life of the project is shown in the table below:

	FY 1979	LOP
1. Workshop Construction and Site Preparation	-	1,733
2. Workshop Equipment	1,032	1,032
3. Technical Assistance		
(a) Management Study	85	85
(b) Long-term	-	540
4. Training	-	78
5. Other Costs:		
(a) A and E Services	230	230
(b) Evaluation	-	13
6. Contingencies	148	473
7. Inflation	5	560
TOTAL	1,500	4,744

Obligation of $800,000 in FY 1980 and of $2,300,000 in FY 1981, in accordance with the amounts shown on the PP Facesheet, is critical to avoid lengthy and costly delays in provision of necessary technical and construction services as well as to avoid both increased costs and reduced benefits of the World Bank and EC-financed portion of the multi-donor program.

The GOTG will contribute approximately $379,000 to the project, exclusive of the value of the site of the new workshop.

C. Summary of Analyses

The project is technically and financially sound. Preliminary plans and cost estimates were reviewed by an engineer from REDSO/WA and the AOO/Banjul and found sufficient for the requirements of Section 611(a) of the Foreign Assistance Act. No obstacles to effective imple-

mentation of a sociological nature were found and the project's anticiated impact on rural areas will be favorable. Considerable benefits will accrue to the GOTG in terms of improved vehicle, equipment, and road maintenance. Under conservative assumptions, the project's IRR will be 23%.

An IEE was prepared which recommends a Negative Determination; the Project Review Meeting concurred in this recommendation.

No issues exist in The Gambia with respect to U.S. concerns about human rights. The Gambia's human rights record is one of the best in Africa.

D. Project Implementation

The PWD will be the principal implementing agency and will ensure coordination with the EC, World Bank, and other GOTG ministries.

Since The Gambia is an RLDC, the source and origin of goods and services financed under the project shall be the countries eligible under Code 941. No waivers are anticipated at this time.

Major conditions and covenants to be incorporated into the Grant Agreement are set forth in Annex 5 to the PP and have been discussed with the Director of the PWD and with representatives of the Ministries of Finance and of Works and Communications. Therefore, no difficulty is anticipated in obtaining the GOTG's acceptance at the time of negotiation of the Grant Agreement.

E. Committee Action and Congressional Notification

A Project Review Meeting was chaired by Jonathan R. McCabe on April 27, 1979. The participants at the meeting endorsed the project's strategy and recommended its approval subject to certain minor revisions which have now been made. The memorandum at Tab A reports on that meeting. The meeting's recommendation concerning the schedule of obligations was, however, subsequently modified to accord with AFR/SFWA's estimation of available funds.

Congress was notified of AID's intent to obligate funds for this project on June 4, 1979; the waiting period expires at close of business on June 18, 1979.

F. Responsible AID Officers are:

Douglas Broome
AID Operations Office, Banjul

Todd Crawford
Project Officer
AFR/DR/SFWAP

III. Recommendation: That you sign the IEE at Tab B, approving the recommended Negative Determination, and the PAF II (Tab C), approving the proposed project, its schedule of obligations, and the negotiation and execution of a Grant Agreement of $1,500,000 in FY 79 with the GOTG.

Drafted by:AFR/DR/SFWAP,TCrawford:fn:June 8, 1979

Clearances:
DAA/AFR,WHNorth
AFR/DR,NCohen
AFR/DR/SFWAP,JRMcCabe (draft)
AFR/DR/ENGR,TTummarello (draft)
AFR/DR/SDP,JNixon (draft)
AFR/DR/EHR,MSeymour (draft)
AFR/SFWA,HFarnham (draft)
AFR/SFWA,OLustig/JJohn (draft)
AFR/DP,EDonoghue (draft)
GC/AFR,AWilliams (draft)

PROJECT AUTHORIZATION AND REQUEST FOR ALLOTMENT OF FUNDS - PART II

Country: The Gambia

Project: Gambia Rural Roads Maintenance

Project No.: 635-0206

Pursuant to Part I, Chapter 1, Section 121 of the Foreign Assistance Act of 1961, as amended, I hereby authorize a Grant to the Government of The Gambia, the "Cooperating Country," of not to exceed One Million Five Hundred Thousand United States Dollars ($1,500,000) to assist in financing certain foreign exchange and local currency costs of goods and services required for the project as described in the following paragraph.

The project consists of the construction and equipping of a Central Workshop for the Public Works Department (PWD), technical assistance to study and make recommendations for the improvement of the PWD's equipment management system, and the establishement of a training program for PWD personnel, with particular emphasis on management of road construction/ maintenance equipment (hereinafter referred to as "the Project"). The Project is a part of a multi-donor road maintenance program with additional funding from the World Bank and the European Community's Special Action Fund.

I approve the total level of A.I.D. appropriated funding planned for the Project of not to exceed Four Million Seven Hundred and Forty-Four Thousand United States Dollars ($4,744,000), Grant, during the period FY 1979 through FY 1983, including the amount authorized above and additional increments of grant funding during that period subject to the availability of funds in accordance with A.I.D. allotment procedures.

I hereby authorize the initiation of negotiation and the execution of the Project Agreement by the officer to whom such authority has been delegated in accordance with A.I.D. regulations; subject to the following essential terms, covenants, and major conditions, together with such other terms and conditions as A.I.D. may deem appropriate.

A. Source and Origin of Goods and Services

Goods and services, except for ocean shipping, financed by A.I.D. under the Project, shall have their source and origin in the Cooperating Country and in countries included in A.I.D. Geographic Code 941, except as A.I.D. may otherwise agree in writing. Ocean shipping financed under the Grant shall be procured in the U.S. or the Cooperating Country, except as A.I.D. may otherwise agree in writing.

B. Conditions Precedent

1. Prior to any disbursement, or the issuance of any commitment documents under the Project Agreement, the Cooperating Country shall furnish to A.I.D., in form and substance satisfactory to A.I.D., evidence that the Cooperating Country has agreements with IBRD and the EC to provide road maintenance equipment and spare parts and road maintenance operating costs.

2. Prior to the first disbursement of funds under the Project for A/E services, or to the issurance of any commitment documents with respect thereto, the Cooperating Country shall furnish to A.I.D., in form and substance satisfactory to A.I.D., evidence that all necessary legal and other measures have been taken to make available to the PWD the site specified in Annex 12 of the Project Paper for the purpose of construction of the new workshop.

3. Prior to the first disbursement of funds under the Project for each construction activity, or to the issuance of any commitment documents with respect thereto, the Cooperating Country shall furnish to A.I.D. the following, with respect to such construction activity, in form and substance satisfactory to A.I.D:

(a) Detailed plans, specifications and construction schedules with respect to such activity;

(b) A description of the arrangements made for providing construction services for such activity, including an executed contract for construction services with a firm acceptable to A.I.D., unless such services are being provided by force account; and

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

C. Covenants

The Grant Agreement shall contain covenants providing in substance as follows:

1. Prior to the arrival of the A.I.D.-fina ed consulting team to carry out the Equipment Maintenance Management Study, the Cooperating Country shall have created the position of Training Officer within the PWD and nominated a candidate for the position.

2. Within one month of the arrival of the A.I.D.-financed, long-term technical assistance team, the Cooperating Country shall have provided:

(a) Acceptable candidates for the positions of counterparts to the technical assistance team; and

(b) Acceptable candidates from the Accounts and/or Stores Division of the MWC, as counterparts to implement the recommendations of the Equipment Maintenance Management Study, should it be determined that such counterparts are required.

3. The Cooperating Country shall ensure cooperation and coordination among the PWD, the Accounts Division and the Stores Division of the MWC, and the Ministry of Finance so as to facilitate execution of the Equipment Maintenance Management Study, and implementation of the Study's recommendations.

4. The Cooperating Country shall ensure that the PWD has direct control over the storage and distribution of spare parts for equipment and vehicle maintenance.

5. The Cooperating Country shall carry out in a timely manner the site preparation tasks described in Annex 12 to the Project Paper, including, but not limited to, construction of the access road and provision of all necessary utilities.

6. The Cooperating Country shall rehabilitate the existing workshop equipment specified in Annex 11 to the Project Paper and shall distribute it to the Regional Workshops when the new Central Workshop becomes operational.

7. In view of the importance of adequate maintenance and operation of the Central Workshop and of a continued training program to accomplish the objectives of the multi-donor road maintenance program, the Cooperating Country agrees to provide sufficient funds for those purposes in its annual operational budget.

Goler T. Butcher
Assistant Administrator
for Africa

JUN 13 1979

Date

GAMBIA RURAL ROADS MAINTENANCE

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9. Social Analysis Details
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I. PROJECT DESCRIPTION

This project will provide $4.7 million in AID grant assistance over five years (FY 1979-83) to the Government of the Gambia, in conjunction with a multi-donor program to improve road maintenance in the Gambia. The AID contribution will be to provide technical assistance and training to improve the equipment maintenance capability of the Public Works Department, which will be responsible for executing the road maintenance program, and to construct and equip a new Central Workshop. The project also includes two studies, an equipment maintenance management study to be carried out at the beginning of the project, and an architectural/engineering design study for the new Central Workshop.

Project Goals and Objectives

The general goal of the multi-donor program is to improve the economic well-being and the quality of life of the rural population in he Gambia, through improving the country's road maintenance capabilities. The AID component will contribute to this goal by increasing the technical managerial capacity of the PWD to meet the equipment maintenance and repair needs of the road maintenance program. It will also contribute directly to the improvement of rural quality of life by improving maintenance and repair to much of the Government's vehicle fleet, some part of which is essential to rural service delivery. Finally, it will introduce American management methods and techniques to the PWD and institutionalize them through an ongoing training program, thus helping to build the PWD's capacity to contribute to the country's development process.

The specific objectives of the project are:

-- to improve PWD equipment maintenance and management capabilities;

-- to institutionalize these improvements through an ongoing training program;

-- to provide an adequate, secure, and appropriately sited structure to house the facilities of the PWD Central Workshop; and

-- to provide adequate and appropriate equipment to carry out the functions of the PWD Central Workshop and regional workshops.

The project fits within AID's overall strategy for the Gambia by providing economic benefits to the rural population, removing constraints on increased production, consumption, and service delivery in rural areas, and increasing the Gambia's absorptive capacity for future development assistance. Decreased road user costs associated with improved road maintenance will benefit mainly small truckers and transporters and because of competition in the rural transport sector will eventually be passed on to rural producers and consumers. The costs of delivering key services such as health and education will also be reduced, both by improved vehicle maintenance and repair and by improved road maintenance. Finally, the benefits of the proposed technical assistance and training activities will be reflected in a continuously increasing capacity of the PWD and other government agencies to respond to needs generated by the country's development program.

Background*

This project has evolved out of an extended multi-donor planning effort for transport sector change in Sahelian countries. In 1975, a study of possible feeder road improvements in The Gambia was carried out by A. Macchi-Valle for the U.N. Sahelian Office (UNSO) (4). A number of its recommendations were incorporated in The Gambia's Five-Year Plan for 1975/76-1979/80, as well as ambitious plans for upgrading parts of the nation's primary and secondary road system (5).

A study carried out by the U. N. Economic Commission for Africa in 1976 (11) concluded that existing road maintenance operations in the Gambia would prove insufficient to protect the actual and anticipated investments in the road network. In 1977 a similar conclusion was reached in the Gambia volume of the Diagnostic Study of Road Maintenance for the Sahel commissioned by CILSS with USAID funding. (1) This study recommended a phase program to improve road maintenance in the Gambia. Components of the proposed program included workshop construction, purchase of tools and workshop equipment, technical assistance, training, and purchase of spare parts.

The World Bank sent a transport sector mission to the Gambia in 1976. This mission identified the improvement of road maintenance operations as a key issue in the transport sector, and proposed a five-year program for World Bank financing (17). As a first step, consultants were selected to carry out a detailed study of present road maintenance activities and to recommend a program for improvement of optimal levels of efficiency (9). The

* Numbers in parentheses refer to sources listed in the Bibliography, Annex 16.

World Bank then proceeded to prepare a road maintenance program as its First Highway Project in the Gambia.

During this time the interaction among AID, IBRD, and other donors on the Transport Sector Working Group of the Club des Amis du Sahel led to an expression of interest by AID and the EEC in participating with the IBRD in the proposed project. Further exploration of this interest between the AID office and the GOTG led to the identification of a potential AID participation in reorganizing the equipment maintenance management system of the PWD and providing the new Central Workshop with associated tools and equipment along with technical assistance and training inputs. The IBRD, as the lead donor, would provide credit for the purchase of needed new road maintenance equipment and for the associated studies and technical assistance to assure good project management.

As a result of these discussions, AID/Banjul prepared a PID including the above project elements in March 1978 which was approved in August 1978. The PID approval cable suggested greater emphasis on training, analysis of recurrent costs and PWD organization (see Annex 6). Because of its project preparation schedule, the IBRD has proceeded to approve its project independently of AID, but assuming that the following project would be carried out with parallel financing through the coordination of the GOTG.

Multi-Donor Program Funding in Road Maintenance

The road maintenance project proposed by the IBRD will have the following objectives:

a. execution of a four-year program (FY 1980-83) for the routine maintenance of about 780 kms of roads, including backlog periodic maintenance on about 190 kms of major laterite roads, and

b. execution of studies for a follow-up maintenance program and exploration of availability of aggregates for paved road surfacing.

To achieve these objectives, the IDA credit will finance the purchase of road maintenance equipment, vehicles, and spare parts; materials purchase and operating costs for the backlog maintenance program; installation of a weighing bridge to control axle loads on heavily-travelled routes; technical assistance to PWD; consultant services for the proposed studies; and a scholarship for overseas training of a Gambian mechanical engineer. Details of the proposed Bank project are given in Annex 15.

The program cost to be financed by the IBRD and the EEC is estimated by the World Bank at U.S. $6.7 million. To this cost must be added the AID costs of workshop construction, equipment and the associated technical assistance and training, estimated in the following project as U.S. $4.74 million, and the GOTG contribution to both projects, estimated at $4.2 million of which $0.38 million is for the AID project. (See Table 1.)

Thus the planned AID contribution would represent 30% of the total anticipated program costs of $15 5 million. The Bank expects to contribute 37% of project costs. EEC participation is expected to contribute $1 million or 6% of project costs, and the GOTG contribution to the road maintenance projects will amount to 27% of the total, of which $0.4 million is considered the GOTG contribution to the AID project (7% of AID project costs).

Improved performance by the PWD Central and regional workshops is seen by the Bank as an essential ingredient in the success of the road maintenance program. Although the Bank is providing a mobil workshop to execute field repairs on road maintenance equipment, major repairs will have to be done in the Central Workshop. The capacity of the regional workshops to execute minor repairs should be established by the end of the first phase of the Bank's program in order to insure continuing support for the PWD road maintenance program and other development activities.

AID is proposing to fund the equipment maintenance system component of the multi-donor program for four reasons: (1) It offers an opportunity for AID to make a unique contribution to the project in the form of U.S. management systems expertise; (2) It is a distinct and readily identifiable component lending itself to separate or parallel project preparation activities; (3) It was identified in the AID-funded, CILSS-sponsored Diagnostic Study as a crucial element in the improvement of the Gambia's road maintenance capabilities; and (4) Improving the PWD's capability for maintenance of other government vehicles allows AID to extend the benefits of the IBRD program to include improved delivery of other government services to rural areas.

A breakdown of total program funding by component and by source is given in Table 1. IBRD will be the lead donor, but the GOTG will have overall program management responsibility. The AID project will have the direct supervision of an AID Project Officer in Banjul and technical backup from REDSO/WA as requested by AID/Banjul.

AID Project Design Details

The AID project includes the following components:

1. Workshop construction

2. Workshop equipment

3. Technical assistance

4. Training

5. Studies

Workshop construction. The new Central Workshop will be constructed on a government-owned site in the industrial area of Kanefing, west of Banjul. A 24-acre site will be reserved for PWD use, as shown in the map in Annex 12. The project will include paving of 25,500 m^2 and fencing of an area of approximately 50,000 m^2. About 7,500 m^2 of covered area will be required. The total cost of the workshop construction component, including buildings, fencing, paving and site preparation, will be $2.4 million, of which $1.6 million is estimated to be in foreign exchange and $0.8 million in local currency.

The GOTG will contribute the land, build an access road to the site, and bring in water and electricity from nearby main lines. The value of the GOTG contribution is estimated at U.S. $229,000. Obligation of funds for workshop construction is scheduled to take place in FY 80 and FY 81.

Workshop equipment. The purchase of workshop equipment has been planned to bring the Central Workshop, the Eastern Regional Workshop at Mansakonko, and the sub-depots at Basse and Georgetown up to a capability level corresponding to their planned responsibilities. The Central Workshop handles overhauls and major repairs of vehicles and road maintenance equipment. The Regional Workshop is to be upgraded to have the capacity to carry out limited overhauls. The sub-depots are expected to provide servicing, minor repairs, and some component replacement.

Relatively little of the existing workshop equipment will be worth salvaging through reconditioning. PWD will assume the costs of reconditioning and will assign most of the reconditioned equipment to the Regional Workshop or to the sub-depots. A few items will be retained in the new Central Workshop. Details are given in Annex 13.

Specifications for new workshop tools and equipment to be purchased under this project will be prepared by the architectural and engineering firm responsible for workshop design. The total cost is estimated at $1,226,000, including shipping costs, fees, and spare parts. This cost will all be in foreign exchange. The value of the GOTG contribution to this component is estimated at $6,000, to include purchase of parts and labor for reconditioning of existing equipment and transport of tools and equipment to the regional workshops.

Technical assistance. The proposed technical assistance has been planned to complement the World Bank's and other donors' technical assistance programs, as well as to provide continuous monitoring of the AID aspects of the multi-donor program. It is proposed to provide two experts for three years each (mid FY 80 to mid FY 83), to implement the proposed equipment maintenance management system, to provide technical direction for workshop activities, and to provide on-the-job training to Gambian counterparts. An outlined Terms of Reference for the proposed long-term technical assistance appears in Annex 14.

The two experts include an Equipment Management Systems Specialist and a Master Mechanic for the Central Workshop. The Equipment Management Specialist would be responsible for implementing the recommendations of the equipment maintenance management study, and for providing on-the-job training in management methods to senior workshop staff. The Master Mechanic would be responsible for assisting the Equipment Management Specialist, insuring that workshop operations serve the needs of the road maintenance program, and providing on-the-job training in equipment maintenance to Gambian mechanics in the Central and regional workshops. These two experts will arrive approximately six months before the scheduled phase-out of the IDA financed master mechanic.

The total cost of the AID long-term technical assistance program is estimated at $540,000. The GOTG is expected to nominate counterparts for the two experts. The value of their salaries, a local government contribution, is estimated at U.S. $27,000 over the three-year period.

Training. The proposed training program consists of six elements:

- on the job training
- weekly demonstrations or "shop talks" by supervisors
- training on items of new equipment (FY 81 and 82)

- formal courses in basic mechanics and basic accounting (FY 80 and 81)

- instructor training and hiring of a full-time Training Officer (mid FY 80-mid FY 83)

- purchase of training equipment (FY 80).

The total cost of the training program will be $93,000. The GOTG will take over responsibility for the salary of the Training Officer in FY 83. Other local contributions would include classroom space and equipment and operating costs (electricity, etc.) for training courses. The value of the local government contribution is estimated at $5,000.

Studies. There are two studies to be carried out for this project: an Equipment Maintenance Management Study and an A/E Workshop Design Study, both to be carried out in FY 80.

1. Equipment Maintenance Management Study. The purpose of this study is to introduce more efficient management techniques in the design and operation of the Central and regional workshops, in order to build up the institutional capacity of the PWD. Three experts are proposed for the study team: an Organization and Management Specialist, a Spare Parts Specialist, and a Training Specialist for a total of eight and one-half man-months. An outlined Terms of Reference for this study is presented in Annex 13.

The study team will:

- study present work flow, work practices and work programming in the central and regional workshops and prepare detailed shop procedures for improvement;

- prepare forms for recording data on equipment utilization, maintenance and repair, and develop a system for processing these data;

- study the present spare parts procurement, stock control and distribution system and recommend changes;

- work with the PWD Training Officer to identify skill needs, establish performance standards, and develop a training program leading to skill certification; and

- provide informal guidance to the A/E contractor which will be responsible for a final design of the new workshop which assures efficient operation and appropriate patterns of workflow.

It is estimated that the study will take approximately three calendar months. Total cost is estimated at $85,000. This amount is shown in the budget for technical assistance since it is anticipated that the study will be carried out by the same firm which supplies the long-term technical assistance. No local contribution to this component, other than the provision of office space within the PWD compound, is expected.

2. A/E Workshop Design Study and Construction Supervision. The cost of this study and the supervision is estimated at $275,000, with an additional local government contribution of $92,000 in engineering services. An outlined Terms of Reference for this study is presented in Annex 12. Note that the TOR includes preparation of final specifications for the workshop equipment. These specifications were included because of the need to coordinate the design of the workshop with requirements of the equipment. Disbursement of funds for this study is scheduled for FY 80.

The proposed timing of all AID project components is summarized in Table 2.

TABLE 1

Total Proposed Multi-Donor Funding
for Road Maintenance Projects in The Gambia

(U.S. $000)

Component	Source: AID	IBRD and EEC	GOTG	Total
1. Road Maintenance Equipment and Spare Parts	--	2,181	--	2,181
2. Road Maintenance Operating Costs	--	--	2,911	2,911
3. Backlog Road Maintenance Operating Costs	--	1,154	--	1,154
4. Workshop Construction and Site Preparation	1,733	--	175*	1,908
5. Workshop Equipment	1,032	--	5*	1,037
6. Technical Assistance	540	1,139	27*	1,706
7. Training and Scholarship	78	46	5*	129
8. Studies, Engineering and Evaluation	328	767	77*	1,172
Subtotal	3,711	5,287	3,200	12,198
Physical Contingencies	473	419	167	1,059
Price Contingencies	560	1,001	825	2,386
TOTAL	4,744	6,707	4,192	15,643
Percentage by Source	30%	43%	27%	100%

*indicates GOTG contribution to AID-funded project component

N.B. Costs include contingencies and inflation projected at a rate of 8% for foreign costs and 10% for local costs. (See Annex 15 for further details on the IBRD-EEC project.)

TABLE 2

Timing of AID Project Funds Commitments by Component[4/]
(U.S. $000)

Component	FY79	FY80	FY81	FY82	FY83	Total
1. Workshop Construction and Site Preparation	-	-	1,733	-	-	1,733
2. Workshop Equipment	-	1,032	-	-	-	1,032
3. Technical Assistance:						
a. Management Study	-	85	-	-	-	85
b. Long-term[1/]	-	450	-	90	-	540
4. Training	-	21	29	26	2	78
5. Other Costs:						
a. A/E and Construction Supervision	-	230	-	-	-	230
b. Evaluation	-	-	-	13	-	13
Sub-total	-	1,818	1,762	129	2	3,711
6. Contingencies[2/]	-	93	261	110	9	473
Sub-total	-	1,911	2,023	239	11	4,184
7. Inflation[3/]	-	211	308	34	7	560
Total	-	2,122	2,331	273	18	4,744

1. Technical assistance costs are estimated on the basis of the following average costs per person-year: $30,000 salary, $24,000 travel, housing and allowances, $36,000 overhead + fees.

2. Contingencies vary from 8 to 20% depending on the component.

3. Inflation is estimated at 8% for foreign costs and 10% for local costs based on recent IMF analyses.

4. For a table showing the timing of obligations, commitments and expenditures, see Financial Plan, Table 5.

II. PROJECT SPECIFIC ANALYSES

A. Economic Evaluation

The AID financed project will provide the Public Works Department (PWD) of the Gambia with a new workshop, fully equipped, and related support in terms of a management study, a technical assistance program, and a training program. The economic costs of this project are $4.524 million in 1979 dollars, of which $4.184 million will be financed by AID and $0.34 million by the GOTG.

This program is linked to an IBRD/EEC funded project which will finance highway maintenance equipment and spare parts procurement and technical assistance. This program will make possible the routine maintenance of 780 km. of gravel roads and the reconditioning of 192 of those 780 km.

The AID project is dependent upon the implementation of the IBRD/EEC project. But the latter project is presently proceeding independently of the AID project. There are, consequently, two possible ways of evaluating the economic feasibility of the AID project:

a. Consider the marginal impact it will have on the highway maintenance program. By improving equipment servicing and maintenance, the program will clearly help to improve highway maintenance itself, and a part of the user cost savings resulting from improved highway conditions will be indirect benefits of the program.

b. Consider the direct impact it has on the vehicle and equipment fleet. The increased productivity of this fleet (in terms of increased number of working hours per year) can be translated into capital cost savings, as fewer vehicles and less equipment are required to produce the same level of service.

The two methodologies have been successively used to test the economic feasibility of the AID program. The details of the reasoning and of the computations are presented in Annex 8. The results of the analysis are presented below.

First of all, the global multi-donor program has a very high rate of return. An I.R.R. of 49.8% is obtained when taking as costs the global costs of the two projects and as benefits the total user cost savings resulting from the routine or periodic maintenance programs.

A marginal analysis, then shows that if only 15% of the highway maintenance benefits can be attributed to the equipment maintenance program financed by U.S. AID, the AID project is justified. In fact, the AID project will probably contribute more than 15% of the benefits, as the past PWD operations have clearly shown the disastrous effects of abnormally high equipment down times on the highway maintenance program.

It must be noted, furthermore,that the indirect benefits due to the improved performance of those vehicles and equipment not used for highway maintenance are not taken into consideration (as difficult to quantify) in this marginal analysis.

Finally, an economic evaluation of the AID project was made by comparing the investment costs of the project to the direct benefits it is expected to generate in terms of improved performance of the vehicles and equipment serviced and maintained by the PWD. This would apply to:

a. Non-PWD vehicles maintained by PWD.

b. Existing PWD equipment remaining in service.

c. New equipment financed by the IBRD/EEC project.

The replacement cost of this global fleet has been estimated to be about $12 million in 1982, when the new workshop becomes operational. The benefits due to the reduction of down times have then been computed as equal to the capital cost savings made possible by an increased use of vehicles and equipment. These were found to represent about $900,000 in 1982 (assuming that availability of equipment can be increased by 30%), and to grow thereafter by 5% per year during the 20-year period of economic evaluation. The corresponding I.R.R. for the project is 23%, which is definitely higher than the opportunity cost of capital in the Gambia.

In conclusion, the economic evaluation of the project shows a very satisfactory rate of return whether one considers its indirect benefits on highway maintenance or its direct benefits on equipment maintenance.

B. Social Soundness Analysis

Methodology

The methodology used for the social soundness assessment of this project includes the following elements:

-- identification of beneficiaries for each project component

-- assessment of the relationship between project beneficiaries and AID target groups

-- assessment of socio-cultural factors related to project feasibility

-- assessment of potential "spread effects" of the project

-- evaluation of the incidence of economic benefits among social groups.

The Social Soundness Analysis is presented in Annex 9. Major findings are summarized below.

Beneficiaries and Benefit Incidence

Direct beneficiaries of the AID project include:

-- central and regional workshop employees

-- other employees of the PWD mechanical section, including road maintenance personnel

-- local contractor employees engaged in workshop construction

-- PWD management

-- MWC management

-- other GOTG ministries

Indirect beneficiaries of the AID project include the direct and indirect beneficiaries of the multi-donor project which it supports. This includes:

-- road users

-- rural producers and consumers

Workshop employees and other PWD employees will benefit from improved working conditions and from opportunities to upgrade their status through training. Local contractor employees will gain employment and income, and workshop construction will strengthen local contractor capabilities.

PWD management and MWC management will benefit from the findings of the Equipment Maintenance Management Study and the implementation of its recommendations. PWD management will also benefit directly from improved working conditions and improved productivity of personnel. Economic savings will accrue to the PWD budget as a result of improved workshop performance, through reduced vehicle and plant down time and more efficient use of human resources. These savings will at least partially offset the recurrent costs of the project. Thus, streamlining workshop operations should result in more resources becoming available for road maintenance.

Other ministries will benefit from improved vehicle maintenance and repair, as well as from improved road maintenance. It is expected that the combination of these effects will act as an inducement for those ministries involved in service delivery to further decentralize their operations in rural areas.

The incidence of road user savings is analyzed in some detail in Annex 9. About one-fourth of user cost savings will be generated in the Banjul area, and slightly less than half on paved roads. Only 3% of user cost savings will accrue to non-Gambian traffic.

Heavy vehicles (buses and trucks) receive over half of the benefits. Most of these benefits accrue to trucks engaged in crop transport and distribution of consumer goods. At present, only a small share (5% in 1976) of the nation's truck fleet is owned by the parastatal GPMB. Thus, truck transport benefits accure largely to the private sector, which is composed of many small owners and is quite competitive. Bus savings are small in comparison, and accrue largely to the parastatal GLPTC or to tourist enterprises.

Government vehicles (PWD and MANR registration) and diplomatic vehicles make up about 13% of the nation's vehicle fleet. User cost savings for these vehicles accrue to the government and to donor agencies. Of private vehicles, about one-third are motorcycles, about half are personal cars and small taxis circulating largely in the urban area, and the remaining sixth are long-distance public transport vehicles ("bush taxis"). User cost savings in the first two categories (about 23% of all savings) accrue to vehicle owners. About 6% of all user cost savings accrue to the last-named category, which provides public passenger transport in rural areas.

Like trucking, this subsector is composed of many small owners and shows a high degree of competition. Therefore, it is assumed that user cost savings for privately owned trucks and large taxis are passed on to the rural producers and consumers in the form of a slower rise in transport tariffs than would otherwise be the case. Benefits eventually reaching the rural population are estimated to be about 60% of all road user savings (54% from non-GPMB trucks and 6% from bush taxis).

Other road user groups include road maintenance equipment, agricultural machinery, and non-motorized traffic (bicycles, animal-drawn carts, and pedestrians). No attempt has been made to quantify benefits in these categories. The greater portion of these benefits will accrue in the first two categories and will thus go directly to Government.

In addition to reducing road user costs, the road maintenance project will bring indirect economic and social benefits to the people of The Gambia. These benefits accrue principally on the least trafficked roads and in rural areas served by feeder roads, since these are the areas which would be least likely to receive road maintenance in the absence of the project. Due to the geographical configuration of The Gambia, practically all of the rural population will benefit from the proposed program.

Socio-Cultural Feasibility

The proposed project will most immediately benefit a group of urban, salaried employees and wage workers in the small modern sector of the economy. This is not the usual AID target group, but it is a group of key importance for the achievement of AID's objectives in the areas of institutional and human resource development. Indirectly the project will bring benefits to the poor majority by facilitating improved service delivery in rural areas and by retarding rises in the rural cost of living.

Access to project benefits will not differ significantly by ethnic or religious groups. Rural areas will be favored over urban areas, which is in line with both GOTG and AID policy. The project will be carried out in collaboration with other donors and will reinforce other donor development activities.

Poor past performance by the PWD is partly attributable to poor workshop conditions and partly traceable to the economic difficulties characteristic of Sahelian countries. The proposed project will alleviate both of these conditions. PWD personnel generally appear to be able and willing to improve their performance

through training. The proposed training program (see Annex 10) has been designed to maximize its socio-cultural feasibility.

Role of Women. Women are not excluded from access to employment opportunities in the PWD, either formally or informally. Not only is the clerical staff largely female, but women are sometimes also employed in the mechanical workshop. Female skilled workers are usually found in welding or in carpentry, i.e., jobs which require manual dexterity but do not require heavy lifting.

Women have had equal access to technical education in the secondary schools and the VTC, and it is expected that this pattern will continue. However, women have been more likely actually to enter skilled occupations in the urban area than in the more traditional rural areas. Women are likely to be under pressure from their families to leave such jobs upon marriage or childbirth.

Throughout the Gambia where educational opportunities have been sharply limited for all, women have participated distinctly less than men in primary education. This effect is even more marked in the rural areas, which are overwhelmingly Muslim. As a result women may not have equal access to the education opportunities ultimately leading to possibilities for employment with capacity to control, however, so it should not invalidate the project.

Women will participate less than men in the indirect benefits of the project. Few women own vehicles or possess a driver's license. Women do travel and transport goods in small quantities, although research would probably reveal that they travel, on the average, less frequently and over shorter distances than men.

To the extent that women increasingly make use of vehicles to transport farm products or consumer goods over the national road network, they will receive an increasing share of the benefits of improved road maintenance.

Men's major cash crop, groundnuts, is transported in large quantities over long distances on the road and river system. Thus, any benefit from reduced transport cost will accrue to truckers and will eventually be passed through to male farmers. Women's major cash crop, rice, is usually traded in local markets and consumed in the area where it was produced. This could change significantly if present programs to increase rice production are successful. Surplus production would be purchased by GPMB and transported to the urban area, probably under similar arrangements to those presently used for groundnut transport. Women would then share more in the benefits of user cost savings.

Since rural women are less mobile and have less free time than men, they will benefit especially from any project that will help to bring the point of rural service delivery closer to their homes. This is particularly true of maternal and child health services, preventive medical care, access to potable water and water for crop irrigation, and primary schooling. Community development and agricultural extension services may also have a positive impact on women, though this outcome is more problematic. In any case, the project will not have a detrimental impact on the status of women and it may even contribute to an improvement in their quality of life through facilitating the process of rural development.

Participation in planning. There will be relatively little opportunity for direct or indirect beneficiaries to participate in the planning of this project. PWD management has participated and will continue to participate at all stages of the project design. The proposed training program will be developed through the collaboration of the PWD Training Officer and will incorporate opportunities for feedback from foremen, supervisors and trainees. Special arrangements will be made to ensure the participation of regional workshop staff in decisions relating to their responsibilities.

Indirect beneficiaries will have little chance to influence the planning of the workshop or the road maintenance program, as this will be done primarily on technical criteria. An indirect way to ensure that the project will serve vehicles providing services in rural areas would be to maximize the facilities provided to regional workshops, where these vehicles are most likely to come for repair. A complementary project in feeder road maintenance at a later point in time would provide greater opportunities for local participation in planning and project implementation.

Spread effects. The proposed workshop is designed to meet national needs for road and vehicle maintenance and should not be replicated elsewhere in the country. Possible improvements in vehicle and equipment management systems may have wider applicability in other major workshops such as those belonging to the Ministry of Agriculture and the parastatal enterprises. No specific institutional arrangements have been made to transfer management expertise to these other groups; the possibility should, therefore, be addressed in the midstream evaluation scheduled for FY82.

The training program will be developed as part of the National Vocational Training Program and could have significant spread effects if PWD is prepared to take a leading role in the development of this program. The PWD job analysis exercise

and determination of skill requirements for different grades in several occupations could serve as a model for other government departments and private sector employers. Experience gained in the reorganization and rationalization of PWD activities will eventually be reflected in the curriculum developed for the new Technical Institute and Management Development Institute and in a possible future apprenticeship program for the country.

Relation of Project to CDSS Strategy and Objectives

AID development strategy in the Gambia is presently governed by the preliminary CDSS prepared by the AID Operations Office in Banjul as revised in August 1978. Planning for the period 1981-1985 will be governed by a new CDSS which has been submitted by the AID Operations Office to AID/W, but has not yet been reviewed and approved. Both CDSSs foresee an activity in the area of rural road maintenance. This activity is scheduled for implementation in FY78 - FY82.

In both CDSSs the determination of GOTG priorities is based on the current Five-Year Plan which expires in 1979/80. It is assumed that GOTG priorities and objectives will not shift substantially in the next five-year planning period.

The project in road maintenance represents a response to needs perceived by the GOTG, the CILSS, and other donors. In the current Five-Year Plan, the GOTG stresses the need to reduce the disparity between urban and rural incomes through greater concentration of resources in the rural sector. In this context, improvement of rural communications is identified as a key development activity. Objectives in the transport sector include elimination of major bottlenecks, investment intended to stimulate agricultural activity and internal trade, and improvement in the quality of rural life.

The GOTG has proposed a rather ambitious program to upgrade to all-weather standards major roads in rural areas and minor roads in designated development areas. Donor financing has been secured for a large part of this improvement program. The GOTG is willing to commmit the necessary resources to assure adequate maintenance of the improved network, once current constraints on maintenance operations are removed. It is the purpose of this project to assist in overcoming these constraints.

Road maintenance and feeder road rehabilitation are among the First Generation of CILSS projects proposed for the Gambia. These investments are seen as an essential precondition to establishing self-sufficiency in food crops and promoting rural development. They also represent a valuable aid to relief

operations in the event of a natural disaster, such as drought, in remote areas. Through the maintenance of all-weather roads, marketing circuits for local food crops can be developed, and services essential to increased agricultural productivity and improved quality of life can be regularly delivered in rural areas.

The proposed project supports AID, CILSS, and GOTG objectives by providing support to the road maintenance program in a multi-donor context. It also supports AID objectives in three other ways:

1. It will improve vehicle maintenance for ministries involved in rural service delivery.

2. It will enhance GOTG institutional capabilities by introducing an equipment management system and training program in the PWD with possible spread effects on other institutions.

3. It will contribute to the development of human resources in The Gambia by providing training in skilled occupations and helping to satisfy needs for middle management personnel.

All of these activities will help to increase the absorptive capacity of the GOTG for future development assistance.

C. Technical Feasibility

This section describes the technical need for each project element, the choice of means or technology, and any required judgements concerning the completeness of the available data and the accuracy of the cost estimates.

1. Studies

Two types of studies are proposed: one is an Equipment Maintenance Management System Study and the other is an Architect/Engineering Study of a new Central Workshop. Only the management study is discussed here as the A/E study is covered under Section 4 below.

a. Need for the Management Study

The basic purpose of the proposed project is to improve the equipment maintenance management system of the PWD. The system has been identified as deficient in work flow, physical facilities, spare parts stock control and procurement. The PWD and AID/Banjul recognizes that these deficiencies are the result of excess demand on present facilities, lack of appropriate equipment, under skilled and underutilized personnel, and a cumbersome control and procurement procedure for spare parts. This is a complex group of problems which must be traced to their origins, analyzed, and resolved in close cooperation with PWD personnel (as well as other government bodies, where necessary).

The project design team has concluded that the best method of understanding and analyzing these problems is through a short-term (90 day) study by a team of three experts: an Organization and Management Specialist, a Supply Specialist, and a Training Specialist. These specialists would be responsible for:

- studying present work flow, work practices and work programming in the central and regional workshops, and developing detailed shop procedures in management and workshop operations for improvement of these systems

- designing a system for recording and processing data on equipment utilization, maintenance and repair to provide outputs useful for planning, programming, and budgeting purposes (cost accounting system)

- studying the present spare parts procurement, stock control and distribution system

- developing a system to assure a steady supply of fast moving spares, including a means of recording spare parts stock control, distribution and utilization

- identifying with the PWD Training Officer, skill needs of workshop personnel and establishing performance standards corresponding to Civil Service grades

- planning a training program to meet identified skill needs, including procedures for skill certification

- providing informal advice to the A/E contractor concerning final design of the new workshop to assure appropriate design for efficient operation

- designing an evaluation program for the AID project and collecting the required baseline data.

It is estimated that the study will take approximately nine person-months. Total cost, based on an average of $10,000 per person-month, is estimated at $85,000.

b. Choice of Means to Carry out the Study

The need for consultants to carry out the study derives from its highly specialized nature and short duration. The goal of introducing more efficient management techniques is also served by bringing outside consultants to work closely with PWD staff. The shortage of management-level Gambian nationals precludes their use. See Annex 13 for an outlined Terms of Reference.

c. Technical Feasibility

The project design team judges that 80 days is sufficient to carry out the tasks, and the PWD Director concurs. The amount of $85,000 is judged sufficient to cover the costs of most U.S. consulting firms.

2. Technical Assistance

In order to implement the recommendations of the management study and assist the GOTG in carrying out the road maintenance program, two types of long-term assistance will be required. These are an Equipment Management System Specialist and a Master Mechanic. Each expert will spend three years in the Gambia.

a. Need for Technical Assistance

The level of technical assistance was determined through a review of present personnel in the PWD, the future staff in training overseas who are expected to return to PWD positions, the prospects for ODM technical assistance, and the proposed IBRD technical assistance. These available personnel were compared with the positions required for effective implementation of the IBRD and AID programs. (See Annex 10 for more details.)

There is some uncertainty as to the number of PWD positions to be filled by returning Gambian graduates and by the ODM. However, the recent experience of the PWD has been that they can attract graduate engineers, including students on private courses overseas. The project team concurs with the IBRD recommendations that five experts will be required to ensure the implementation of the proposed road maintenance program (a highway engineer, accounting expert, road foreman and two master mechanics).

The addition of the AID project, which broadens and extends the equipment maintenance portion of the IBRD project, will create a need for the addition of the two specialists described above. These two specialists will also provide an emphasis on training which is not fully covered by the IBRD project technical assistance. They will supplement the IBRD personnel concerning road maintenance and provide support to the PWD on the maintenance of other vehicles. Specifically, they will have the following responsibilities:

The Equipment Management Systems Specialist/Team Leader would be responsible for:

- implementing the recommendations of the equipment maintenance management study with respect to workshop operations, spare parts program, and installation of equipment in the new Central Workshop

- providing on-the-job training in management methods to shop foremen, workshop superintendents, and senior management personnel

- assisting the PWD Training Officer in the design and implementation of the ongoing training program.

The Master Mechanic would be responsible for:

- assisting the Equipment Management Systems Specialist in installation of workshop equipment, implementing workshop procedures and a spare parts program

- insuring that equipment used for road maintenance is properly and quickly repaired in the Central Workshop

- assisting in the rehabilitation and reassignment of existing workshop equipment in preparation for the new Central Workshop

- providing on-the-job training to a Gambian Master Mechanic and two Junior Mechanics in vehicle and equipment maintenance

- providing on-the-job training to regional workshop staff through regularly scheduled visits and demonstrations.

The IBRD technical assistance team will basically work within the divisions to ensure the successful implementation of the road maintenance program. IBRD does plan to assign one Master Mechanic to the PWD central workshop to oversee the rehabilitation of eight trucks to be assigned to the road maintenance program, and to assure rapid and correct repair of the new road maintenance equipment. This Master Mechanic will be in the central workshop for two years beginning in FY 79. It is expected that he would overlap by about six months with the Master Mechanic to be provided by the AID project beginning in late FY 80. The AID Master Mechanic's responsibilities will be initially concerned with rehabilitating and reassigning the existing workshop equipment and providing formal and informal training to workshop personnel. After the IBRD mechanic leaves in early FY 81, the AID mechanic will take over responsibility for seeing that the Central Workshop adequately services the needs of the road maintenance program.

The cost of the long-term technical assistance component is is estimated at $90,000 per person-year in 1979 dollars ($540,000 in AID funds when implemented in FY 80 - FY 83), plus $27,000 in GOTG funds. See Annex 14 for an outlined Terms of Reference.

b. Technical Feasibility

The project design team judges that these two specialists can accomplish the tasks identified above in the three years proposed and for the costs indicated. The experts who will carry out the management study will be asked to redefine the scope of work for technical assistance, if necessary, in the light of their more detailed information. It is possible that additional technical assistance may be required to conduct the training program in mechanics and accounting. However, the team expects that this will be covered by outside instructors or by counterparts to the technical assistance experts described above.

3. Training Program

The proposed training program is described in detail in Annex 10. It includes the following six elements:

- on-the-job training
- weekly demonstrations or "shop talks" by supervisors
- training on items of new equipment, to be provided by manufacturers' representatives
- formal courses in basic mechanics and basic accounting
- instructor training and hiring of a full-time Training Officer for three years
- purchase of needed equipment for classroom and shop instruction.

a. Need for Training

The need for training was established through the following sequence of analysis (see Annex 10 for details):

i. Determination of the level of PWD responsibilities and activities to 1985.

ii. Determination of the PWD manpower requirements for 1985.

iii. Assessment of the capacity of existing PWD personnel and returning graduates or trainees to fill these needs.

iv. Determination of additional staff requirements to fill unmet needs.

v. Assessment of the types of skill training required to upgrade existing staff and train new personnel for specific jobs.

vi. Investigation of the available training resources in The Gambia.

vii. Investigation of training resources to be made available in the project period by other donors.

Certain key assumptions were made in order to forecast PWD responsibilities and manpower requirements in 1985. These include:

- The national road network (1250 km) will be maintained by 1985 except for roads which are not PWD responsibility.

- PWD heavy equipment will decrease from the present level of 184 units to about 145 units in 1982/83 and will increase slowly (about 5% per year) thereafter.

- The number of government vehicles to be maintained by the PWD will increase at an average annual rate of 5-10% over the next seven years.

- Existing PWD workshop personnel will become twice as productive as they are under present conditions when constraints on space, equipment, spare parts and work flow are relieved and a training program is implemented.

- The PWD will continue to recruit trained Gambian staff at the same rate as at present. This implies that competition for trained manpower in the economy will grow at a relatively slow rate.

The results of this analysis indicate that the present numbers of workshop staff are adequate to satisfy 1985 needs under the assumption of increased productivity. The present productivity is very low due to a number of constraints which prevent equipment maintenance from proceeding normally, and which have resulted in a backlog of equipment maintenance in the present workshop. The provision of technical assistance under this project will help solve some of the problems, and provisions of new equipment with spare parts will alleviate other constraints. These actions will permit the present workshop to handle the current workload with some training. This would not, however, allow for future growth in equipment and vehicle maintenance requirements. This need will be met by construction of a new workshop.

Total training needs are, therefore, determined on the basis of upgrading existing staff to their potential level of productivity, assuming that turnover is covered by normal PWD recruiting procedures.

b. Means to Implement Training Program

The means to implement the proposed training program are a combination of on-the-job training by PWD personnel and technical assistance staff, basic training in a more formal classroom setting, and short courses by manufacturer's representatives. The most efficient combination of these resources was selected by estimating the probable level of PWD and other national resources with the addition of a full-time training officer (for 3 years). Then the required supplementary resources were estimated to fill the training needs that would not be filled by either PWD or other training institutions in the Gambia.

The philosophy adopted for the training program was to institutionalize the ongoing training as much as possible by involving Gambian institutions, the PWD and Gambian counterparts. This approach will be reinforced by an instructor training program within the PWD.

On-the-job training is part of the PWD's present program and is also provided under the AID and IBRD technical assistance programs (as well as those of other donors). Therefore, no additional cost is foreseen for this component. The cost of the "shop talks" is estimated at 10% of a supervisor's salary plus incidental costs such as travel, for a total of U.S. $500 per year.

A total of $20,000 is allocated annually in FY 81 and FY 82 to cover possible costs of travel and per diem for equipment manufacturers' representatives to give short courses. The allocation also includes local per diem for PWD staff attending the courses.

The cost of formal training is estimated at $3,500 annually in FY 80 and FY 81, before the Technical Institute opens in FY 82. This cost covers the instructor's salary, books and supplies. Classroom space must be found, perhaps in a secondary technical school. The present Vocational Training Center, across the street from the PWD, may provide an adequate facility when it is rehabilitated and re-equipped by ILO/UNDP. This will be completed by the end of FY 79. It is anticipated that classes will be offered at night, attendance will be voluntary but at no cost to the student, and successful completion of a course will be rewarded with a nationally accepted skill certificate.

It is recommended that the post of Training Officer be established for three years, corresponding to FY 80, FY 81 and FY 72. The Training Officer will be expected to undertake job analysis and manpower planning for the PWD in coordination with the National Vocational Training Program; plan and implement the PWD training program (with assistance from the short-term Training Specialist); plan and provide for instructor training; and participate in the selection of candidates for external educational opportunities such as Technical Institute courses and engineering scholarships. The immediate needs of the project justify the nomination of a full-time Training Officer for three years. After this time, the PWD should evaluate its future training needs and determine the need for a Training Officer. It is expected that the continuing responsibilities of this position could be rotated among the senior staff and would take between 20% and 25% of the designated person's time.

The cost of the Training Officer is estimated at $4,200 annually for three years, or $12,600. In FY 83 and thereafter the GOTG is expected to assume responsibility for this post at an annual recurrent cost of $1,000.

The annual cost of instructor training seminars (two seminars of two days each) is estimated at $1,000, to include salary and per diem for ten participants. Classroom equipment will be provided for both classroom and practical training in the workshops with a cost of $11,600. This equipment will be provided in the first year of the project.

The total cost of the training program amounts to $20,800 in FY80, $29,400 in FY81, $25,900 in FY82, and $1,500 in FY83 (in 1979 prices). Approximately 60% of the training cost will be in local currency. Recurrent costs to the GOTG will be on the order of $2,500 (1979 constant prices) per year.

c. Technical Feasibility

The project design team judges that this combination of training inputs, properly organized by the Training Officer, will provide the necessary training to upgrade present skills and increase productivity to the required level. In addition, the magnitude of the training program allows for turnover in the personnel and replacement of staff which leave the PWD under normal conditions. The cost estimates are adequate to provide for the program in its anticipated format, as long as classroom space is provided by the GOTG prior to the opening of the new workshop.

4. Workshop Construction

a. Need for Workshop Construction

The need for a new Central Workshop is based on present and forecast space requirements, present site congestion and poor work flow, the poor security and condition of the present workshop, plans for a PWD move, and alternative uses of the present site.

Forecast requirements for the number of vehicles and equipment to be repaired in the Central Workshop indicate a 70% increase in the present workload by 1985. Even with the increase in workshop productivity forecast due to this project, there is a severe space constraint, particularly on yard space, which will continue to worsen.

In addition to the Central Workshop, the PWD compound in Banjul contains several office buildings (PWD, MWC, GUC and Gambian Government Survey) and the main power plant for Banjul. It is located in the port area of Banjul and is surrounded by the Gambia Port Authority (GPA) facilities, and commercial buildings, leaving no room for expansion. The PWD compound

itself is a former RAF seaplane base constructed cerca 1939 and taken over by PWD after the war. The seaplane hanger was converted to a workshop and was adequate to manage PWD's relatively small fleet of vehicles and equipment at that time, but it is totally unsuited in geometric configuration and size for the responsibilities PWD now has for the maintenance and minor repairs of all PWD and other GOTG vehicles (excluding Police and Ministry of Agriculture vehicles) in the immediate area of Banjul, and to provide major repairs to all PWD heavy equipment in the Gambia.

As the PWD compound is virtually open to the public because of the other offices and facilities contained within the compound, it is not possible to restrict the workshop area to authorized personnel only, resulting in a sizable amount of pilfering of parts from vehicles awaiting repair, tools, and in some cases, major components (transmissions, differentials, etc.). The shop is a steel frame building covered with corrugated metal sheeting in poor condition and rapidly deteriorating.

The proposed new facility would house only the PWD maintenance facility and related service shops. Eventually the entire PWD organization is expected to occupy a site adjacent to the workshop compound, but since the AID financed project only includes the construction of a workshop, the GOTG does not currently have the funds to finance a relocation of this magnitude. As mentioned above, the existing compound is adjacent to the port which is also restricted from expanding due to the developed nature of the area. The removal of DPW and eventually of the entire Ministry of Works organization from this compound will permit the necessary expansion of the GPA without requiring the procurement of highly priced land and razing of existing improvements.

b. Proposed Workshop Site

The new site is located approximately 11 miles (18 km) southwest of Banjul, adjacent to a zone reserved for use as an industrial park. At the present time, the area is unoccupied, but certain other Gambian agencies plan to construct facilities in the area, including the GUC, who have obtained a site for the new power plant adjacent to the area assigned to PWD. The Kotu Parkway lies approximately 600 meters from the eastern perimeter of the site, and Pipeline Road about 1000 meters to the south. Both are paved roads in good condition and can be used for access to PWD vehicles and equipment. (See map in Annex 12.)

The topography of the land is such that little site preparation is required. It is generally flat with a slight slope toward the Kotu stream about 600 meters to the south. Inspection of the nearby laterite borrow pits indicate that the ground water table in the area is deep enough to assure a dry area.

Approximately 40,000 to 50,000 square meters is required for the workshop facility, including the ancillary operations and shops. Approximately twice that area would be required to house the entire PWD operation, or about 24 acres. The land in the area considered is owned by the GOTG, and no difficulty is foreseen in obtaining the necessary acreage. (However, a Condition Precedent is recommended in Annex 5 to ensure that adequate land will be available.) Surveying and marking of the boundaries of the site will be done by PWD.

The location of the proposed site, outside of Banjul, is more accessible to equipment and vehicles used in the rural areas than the present workshop. It is considered superior to a more urban location or to a more remote location which would harder to supply.

c. Proposed Workshop Size, Layout and Construction

Three potential sizes of new workshop were considered in the project design. These options would be to design the new workshop to handle (1) only road maintenance equipment (12% total activity), (2) only PWD vehicles and equipment (20% total activity), and (3) all vehicles and equipment whose maintenance is PWD responsibility. Under the first two options the present workshop would be used to carry out the remaining PWD responsibilities. (The Ministry of Economic Planning and Industrial Development has verified that these responsibilities will not be reduced in the foreseeable future.)

Dividing the PWD responsibilities between the two locations would entail a 20-30% duplication of staff and facilities. It was estimated that the workshop designed for the third option would cost only 50-60% more than the first two options, while allowing for 5 to 6 times as much maintenance activity. The costs required to rehabilitate the present workshop to handle its continuing responsibilities under options 1 and 2 would be $200,000 - $400,000. Therefore, the capital cost implications of options 1 and 2 are slightly less than option 3 but the third option would have fewer recurring costs. The third option was selected by the design team as the most cost-effective.

Two types of layout were considered for the new Central Workshop: a centralized complex for all activities and a decentralized set of shops and offices. (See Annex 12 for sketch plans.) The decentralized layout is preferred by the PWD and the REDSO engineer on the grounds that it is more flexible for expansion. Due to their different work flow patterns, one or the other of the designs may prove to be more efficient after further analysis. Since the cost implications for both layouts are roughly the same, the recommendation for the final layout is left to the A/E design firm. (See Annex 12 for details.) The cost estimate, however, is based on the decentralized layout as described in Annex 12.

The proposed buildings are of metal frame construction with corrugated aluminum roofing and masonry walls, as required. Three types of buildings are described in Annex 12, with complete or partial enclosures as required for their functions at a minimum cost. The REDSO engineer believes this general type of construction to be the most feasible considering maintenance and working conditions, although this may be subject to change by the A/E firm.

There are 7500 sq. m. of covered space and 25,500 sq. m. of paving provided as described in Annex 12. A security fence is also provided. The total cost of these buildings is estimated at $1,987,000 in AID funds plus $208,000 by the GOTG for site preparation and utilities in 1979 U.S. dollars ($2,305,000 and $229,000 in future inflated dollars).

d. Design

A U.S. consultant will be obtained through a host country contract to design the proposed facility. In selecting this contractor, the GOTG, assisted by AID/Banjul and REDSO/WA as required, will use AID procedures to prepare a shortlist and the Request for Technical Proposal (RFTP) following the guidance given in Chapter 1, Handbook 11. The consultant will work closely with the PWD, taking into consideration its requirements as well as the recommendations of the Equipment Maintenance Study Team with respect to changes in work flow patterns, spare parts control, etc. The consultant will also give due attention to budget limitations, durability, and ease of maintenance. The consultant will prepare all plans, specifications, bid documents for construction (IFB), cost estimates, and such other reports and studies as PWD and AID may agree to be necessary. The consultant will prepare final specifications for the workshop equipment to be procured and, finally, will supervise workshop construction.

Cost Estimates and 611(A)

The construction cost estimates for the new PWD compound were derived from actual costs for similar types of construction already done in the Gambia and supplemented with information

gained through conversations with local contractors and PWD officials. The price for metal frame buildings is based on the CIF prices Banjul for buildings shipped the United Kingdom, with 20% added to compensate for the extra shipping cost from the United States.

The Project Paper team, including the REDSO engineer, find the estimated construction costs to be reasonably firm and adequate to permit the Government of the Gambia to construct a facility of the size and type described herein. The team believes the conditions of 611(a) of the Foreign Assistance Act as amended have been met for the project.

4. Workshop Equipment

The workshop equipment required to provide tooling for the new Central Workshop and to supplement the tooling to be sent to the district workshops is detailed in Annex 11. This tooling covers the following eleven categories:

1. Compressors and Generators
2. Hydraulic Equipment
3. Welding Equipment
4. Electric Equipment
5. Hoisting Equipment
6. Hand Tools and Tool Room Equipment
7. Machine Shop Equipment
8. Shop Equipment
9. Diesel Engine Testing
10. Office and Storeroom Equipment
11. Vehicles

a. Need for Workshop Equipment

The required workshop equipment was determined by analysis of the workload for the Central and division workshops compared with an evaluation of the present equipment in these workshops.

The present PWD workshops were found to be inadequately and improperly equipped to handle their normal workloads. Therefore, very little maintenance is being accomplished in the field and the central shop is completely bogged down from the congestion of deadlined equipment and that which is currently under repair.

In discussions with PWD officials it was found that planning is underway to upgrade the capability of the Mansakonko Workshop to accomplish overhaul work. Therefore, it was decided to equip this facility with used equipment from the Central Workshop as much as possible, purchasing additional new equipment under the AID grant as needed to complete the outfitting of the Mansakonko Workshop, as well as to upgrade the capability of the Georgetown and Basse Workshops to accomplish third-echelon repairs (including servicing, minor repairs, and some component replacement).

The types and quantities of equipment recommended for procurement was compared to the personnel staffing of each facility to assure that adequate tools are provided and that overstocking the facilities is avoided. Training equipment is listed in the training annex of this report (Table 10-1 in Annex 10).

The equipment list in Annex 11 denotes item numbers in each category, quantities, brief description, numbers assigned to each facility, unit price and total cost FAS U.S. Port. The total cost for this component is $1,135,320. Equipment procurement costs are completely detailed in Annex 11, Table 4, Summary of Cost of Workshop Equipment.

Present Central Workshop equipment has a value of $80,000 (Public Works estimate) and would cost approximately $2,000 to repair prior to being turned over to the districts or retained in the new shop. It was agreed by PWD that this expenditure would be funded by PWD prior to moving into the new facility and the Grant Agreement will contain a covenant to that effect.

b. Technical Feasibility

It is anticipated that the architectural and engineering team retained to design the new workshop will prepare the final workshop equipment specifications. These specifications should take no longer than 10 working days to complete with all attachments, spare parts provisions and shipping instructions. The project team judges that the amount provided ($1.135 million in 1979 dollars or $1.226 million in 1980) is enough to cover the cost of the proposed equipment, and that the conditions of 611(a) of the Foreign Assistance Act as amended have been met for the project.

D. Administrative Feasibility

1. Implementing Organization

The organization to be responsible for carrying out the project is the Public Works Department (PWD) of the Ministry of Works and Communications (MWC). An organization diagram is shown in Figure 1.

PWD Responsibilities, Organization and Staffing. The PWD has been in existence since before Gambian independence, and has been a major public sector employer of both skilled and unskilled personnel. In the past, the PWD was responsible for the construction and maintenance of all roads, bridges, and government buildings in the Gambia, as well as for the maintenance and operation of the Government vehicle pool.

Recently some of these functions have been transferred to other government agencies or to the private sector. The Ministry of Agriculture and Natural Resources, as well as the Police Department and the parastatal enterprises involved in transport, now operate and maintain their own vehicles. All other ministries, however, depend on PWD to provide vehicle maintenance and to repair the motor pool. In addition, all transport is dependent on the PWD road maintenance capability.

Present government policy is to divest PWD of much of its force account construction responsibility. PWD retains supervisory responsibility for government buildings and roads, but actual construction is being done by private contractors to the extent feasible. All new road construction and upgrading currently under way in the Gambia is being done by private contractors under PWD supervision. Government building construction is largely being done by contractors or by local community groups, although force account construction is still going on in a few remote areas. The Building Branch of the PWD was abolished in the Recurrent Estimates for 1978/79.

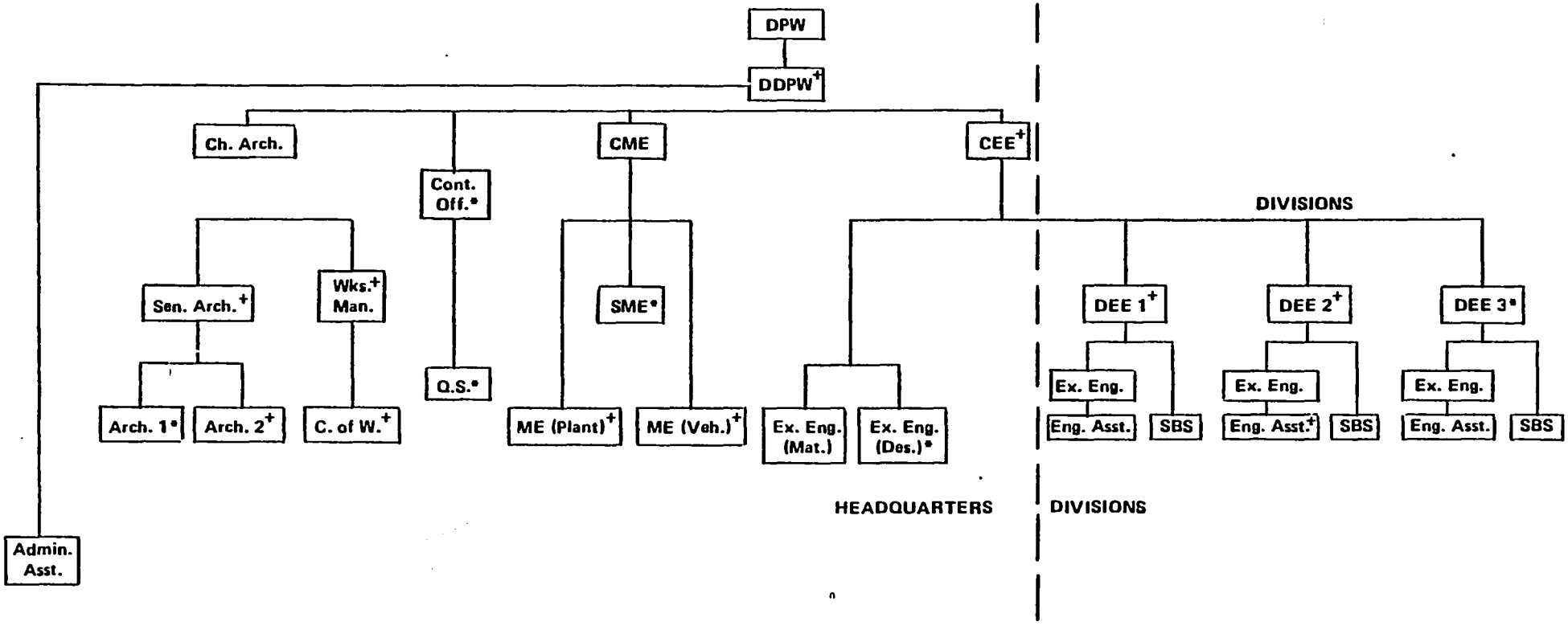
PWD retains its responsibility for building, vehicle, and road maintenance throughout the country. This means that whereas as little as 12% of PWD total effort may have been devoted to road maintenance in the past, a much greater share will be devoted to it in the future. Counting local labor, it is probable that more than half of the total PWD effort in terms of both funds and staff time will be devoted to road maintenance in the future.

The Public Works Department was reorganized in mid-1977 and divided into a Headquarters and three regional Divisions, in

FIGURE 1

PWD ORGANIZATION CHART

THE GAMBIA – PUBLIC WORKS DEPARTMENT
MANAGEMENT ORGANIZATION – DECEMBER 1978



Posts Filled By National Staff	13
* Posts Filled By Expatriate Staff	6
+ Posts Vacant	11
	30

KEY:

DPW:	Director of Public Works	Cont. Off:	Contracts Officer	Ex. Eng. (Mat):	Executive Engineer (Materials)
DDPW:	Deputy Director of Public Works	Q.S.:	Quantity Surveyor	Ex. Eng. (Des):	Executive Engineer (Design)
Ch. Arch.:	Chief Architect	CME:	Chief Mechanical Engineer	DEE:	Divisional Executive Engineer
Sen. Arch.:	Senior Architect	SME:	Senior Mechanical Engineer	Ex. Eng.:	Executive Engineer
Wks. Man.:	Works Manager	ME (Plant):	Mechanical Engineer (Plant)	Eng. Asst.:	Engineering Assistant
Arch.:	Architect	ME (Veh.):	Mechanical Engineer (Vehicles)	SBS:	Senior Building Superintendent
C. of W.:	Chief of Works	CEE:	Chief Executive Engineer		

accordance with the national policy of decentralization. The Headquarters staff includes a Chief Architect and staff whose responsibilities roughly correspond to those of the former Building Branch; a Chief Mechanical Engineer and staff whose responsibilities roughly correspond to those of the former Transport Branch; and a Chief Executive Engineer whose responsibilities roughly correspond to those of the former Civil Engineering Branch. There is also a Contracts Officer to serve the entire PWD headquarters staff.

Road maintenance responsibilities have been assigned to the Divisions, each of which is headed by a Divisional Engineer reporting to the Chief Executive Engineer. The divisional workshops are run by Workshop Superintendents who are responsible to the Divisional Engineer, but who are assigned to their posts by the Chief Mechanical Engineer in Banjul. Personnel and equipment assigned to road maintenance under the IBRD/EEC program will also be based in the Divisions rather than in the PWD headquarters. There will be a mobile workshop and crew provided under the IBRD/EEC program to service road maintenance equipment, and a Master Mechanic to supervise this workshop and train its crew will be provided as part of the IBRD-funded technical assistance.

The regional workshop for the PWD Eastern Division, corresponding roughly to the eastern half of the country, is established at Mansakonko, near the intersection of the south bank primary road and the Trans-Gambia Highway. The Eastern Division also maintains subdepots at Georgetown and Basse. The PWD Northern Division headquarters, presently located in Banjul, may be moved to Kerewan in the near future (but probably not until paving of the Essau-Kerewan link is completed). The PWD Western Division headquarters, presently located at Bakau (just outside Banjul), may be moved to Brikama in the future.

The divisional workshops are an important resource for all ministries involved in rural service delivery. They are responsible for all building maintenance, including schools and clinics, vehicle maintenance, and maintenance of rural communications through road maintenance and repair. The divisional shops are currently understaffed and underequipped to carry out these responsibilities. However, the present PWD recruitment and training program will provide adequate numbers of staff for the regional workshops within one year, if the necessary reassignment of personnel is carried out. (See Annex 11.)

PWD Relation to the AID Project. The PWD is one of the most experienced agencies in the Gambia. It will have the capability to adequately manage the project with the help of the proposed AID technical assistance. Both the Director of the PWD and the head of the Mechanical Division, which is most directly concerned with the project, are Gambian graduate engineers with administrative experience. In addition, part of the IBRD project and part of the technical assistance in the proposed AID project is directly concerned with improving the management information system of the PWD, which will enable better project control.

Road maintenance and equipment maintenance are a primary responsibility of the PWD and a major budget item. Therefore, this project is a major concern for them and should receive adequate management attention. (See Section IV for further analysis of recurrent cost implications.)

Part of the project deals with the spare parts procurement procedure which is located outside of PWD in the MWC. This will require some cooperation and possibly the nomination of counterparts to the Equipment Management Systems Specialist from the Accounts and Stores departments of the MWC. In addition, it will require the cooperation of the Ministry of Finance which handles foreign exchange control. This part of the study will require the support of AID/Banjul and the GOTG in obtaining the cooperation of these organizations with the study team and the follow-up technical assistance. A covenant will appear in the grant agreement with the GOTG to obtain this cooperation.

2. Donor Coordination

Coordination will be required with the IBRD and EEC, which are financing the road maintenance part of the program. This coordination will take place primarily through the Director of the PWD. Supplementary coordination will take place between AID/Banjul and periodic IBRD project monitoring missions, with feedback to the AID technical assistance team as needed. Such coordination has been successful in the past on rural development and health projects.

3. Availability of Skills, Consultants, and Materials

The skills required within the PWD in the form of Gambian counterparts (especially for the Master Mechanic) and a Training Officer are critical to the long-term success of the proposed project. Counterparts for the Master Mechanic include a senior mechanic in the Central Workshop and two junior mechanics. It is expected that these may be the same individuals as those

counterparts for the IBRD Master Mechanic who will be working in the Central Workshop in FY 79-81.

The administrative counterpart of the Equipment Management Systems Specialist should be the Chief Mechanical Engineer, who has administrative responsibility for all workshop activities. In addition, it may be necessary for counterparts to be nominated from the MWC Accounts and Stores Departments in order to ensure implementation of the Equipment Maintenance Management Study recommendations. The need for counterparts elsewhere in MWC should be determined by the Equipment Maintenance Management Study team. The GOTG will covenant to nominate and make available these other counterparts prior to the arrival of the long-term technical assistance.

The specific PWD counterpart personnel, however, will be nominated as a condition precedent for disbursement of the initial project funds. The post of Training Officer is initially conceived as a three-year position paid from project funds. The nominee for this position should be a member of the PWD senior staff but may, if necessary, be recruited from outside PWD.

The use of Peace Corps volunteers in connection with this project was explored by the design team which determined that such use would not be feasible. Three requests for trained mechanics have recently been submitted to the Peace Corps office in Banjul by different GOTG agencies. Two were forwarded to Peace Corps/Washington, but Washington has been unable to find technically qualified volunteers with the necessary communication skills to fill these positions. PWD officials do not perceive a need for Peace Corps assistance and, therefore, is unwilling to nominate a counterpart program officer and initiate a request for assistance.

The project design team concluded that the most appropriate source for technical assistance and studies were American contractor firms. It is considered by the project design team that the best way to attract American consulting firms and to administer the project is to combine the management study and the technical assistance into a single contract. This would eliminate one set of procurement procedures while maximizing the carry-over in expertise from the short-term study to the implementation phase.

The possibility of combining the A/E design study with the other studies was also considered. The success of this option depends on finding interested U.S. consulting firms with expertise

in all three areas. This was considered too limiting on the potential competition. Engineering services are, therefore, expected to be procured through a separate American A/E firm, perhaps with a minor contribution by a local individual. Virtually no Gambian engineering firms exist, and certainly none with the capacity to undertake a project of this magnitude.

The general source/origin rule of this project will be the U.S., the Gambia, and Code 941 countries since the Gambia is an RLDC. The construction contract will be advertised in The Commerce Business Daily and other appropriate U.S. and foreign media to obtain expressions of interest and pre-qualification data. There is only a limited number of construction firms in the Gambia and no known paving contractor. Qualified and interested Gambian firms will be encouraged to submit a bid. However, a recent procurement action in the Gambia suggests that the most probable source of the required construction services will be Code 941 countries, possibly in cooperation with a U.S. firm.

It is anticipated that all metal and materials needed in the construction will be imported from the U.S., as to our knowledge, adequately designed steel frame structures and aluminum roofing are not fabricated in West Africa. Much of the cement found on the shelf in Banjul has been produced in Iron Curtain or other non-eligible source countries. Moreover, supplies from nearby Code 941 countries are erratic, since domestic needs are given greater priority than exports. Therefore, it is recommended that all cement be procured from the U.S. in order to prevent possible delays in the construction.

E. Environmental Analysis

The IEE submitted with the PID (see Annex 7) recommended a negative determination which has been circulated in AID/Washington. The proposed workshop site does not present any significant environmental problems. Precautions should be taken in the design and execution of site preparation and paving activities to minimize potential negative impacts on the nearby Kotu Stream. This small stream is a unique ecological resource, the only fresh-water stream on the peninsula, and may be part of a designated Green Belt area. The project design team feels that adequate protection against pollution of this stream by runoff from the workshop site can be provided by an appropriate storm drainage system, which can be incorporated in the workshop design at no additional cost.

III. FINANCIAL PLAN

This section covers the timing and allocation of project costs and the recurrent cost implications of the project.

A. Timing and Allocation of Project Costs

The total project costs will amount to $5,123,000 including contingencies and inflation over the project period. Of this cost, $379,000 (7.4%) is to be financed by the GOTG and $4,744,000 by AID under a grant agreement. The foreign currency expenditure by AID amounts to 84.1% or $3,991,000, the remaining 15.9% being local currency costs associated with construction and local materials for training and engineering studies.

The financial analysis of the AID project is presented in Table 3 and Table 4. These tables summarize the results of detailed financial estimates made for the different components of the project, which are presented in Annexes 10, 11 and 12. The total amount of the project expressed in 1979 dollars is $4.524 million, of which $4.184 million will be financed by AID and $0.34 million by the GOTG.

The most important contributions of the Gambian Government will be in assigning land for the construction of the new workshop and providing the access road and utilities (valued at $175,000), and in insuring the supervision of construction and providing counterparts to the foreign technical assistants (valued at $100,000). This local contribution has been discussed with the GOTG, which has agreed to its composition and to the costs. It should be noted that this amount represents less than 10% of the total project cost and will not unduly tax the Government's spending ability.

The estimate of $4.184 million for the AID-financed portion of the project includes contingencies, which have been separately estimated for each of the main cost items and represent about 12.5% of net costs overall. The most important contingency factor is the 15% applied to construction of the workshop, which represents about $300,000 of the $473,000 in contingencies taken into account.

Inflation factors of 10% per year on local costs and 8% per year on foreign costs (based on an IMF analysis of recent trends) have been used to compute the financial costs of the project in current dollars. This was done on the basis of the year by year estimates of expenditures (presented in Table 4). Overall, the inflation factor raises the total costs of the project (local and foreign) by 13.4%, bringing the AID financial cost to $4.774 million.

A projection of expenditures by fiscal year was made on the basis of the project implementation schedule as presented in Table 5. The main commitments will have to take place in fiscal years 1980 and 1981, which are the years during which workshop construction and workshop equipment contracts are procured.

If the funds available in FY 80 are limited to $500,000, as presently indicated in the CP, then the project will not be able to proceed as planned. The major adjustment would be the deferral of workshop equipment purchase to FY 81. This would probably delay the opening of the workshop by six months. In addition, inflation would raise equipment costs by an estimated 8% or $98,000.

B. Recurrent Cost Implications

The total recurrent cost implications of the AID project amount to a maximum of $17,000 per year during the project period for technical assistance and training plus approximately $30,000 per year to operate the workshop. Following the project period, in FY 1984 an amount of approximately $50,000 per year would be required to operate the equipment maintenance program, and this would increase with inflation.

The total recurrent costs associated with the IBRD-EEC road maintenance program are estimated at $570,000 in 1979 prices or approximately $900,000 in inflated prices by FY 1984. The IBRD analysis finds that the GOTG can support this level of expenditure. The AID project represents approximately 5.6% of road maintenance recurrent costs. This is a relatively small commitment compared to the recurrent costs of road maintenance itself.

Therefore, it is considered sufficient for the GOTG to state that they consider the recurring costs associated with operation of the PWD workshop and the training program to be an integral part of the multi-donor road maintenance program and indicating the provisions which will be made to cover those costs. The Grant Agreement will contain a covenant to this effect.

TABLE 3

PROJECT SUMMARY
PROJECTED FINANCIAL FLOW
($000)

Cumulative	Obligation	Commitment	Expenditure	Pipe.[1/]
FY 79	1,500	-	-	1,500
FY 80	2,300	2,122	470	1,830
FY 81	4,600	4,453	3,589	1,011
FY 82	4,744	4,726	4,636	108
FY 83	4,744	4,744	4,744	-

[1/] Cumulative obligations less cumulative expenditures

TABLE 4

SUMMARY OF COST ESTIMATES AND FINANCIAL PLAN (U.S. $000)

	AID			GOTG			Total		
	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total
Workshop construction	1,213	520	1,733	105	70	175	1,318	590	1,908
Workshop equipment	1,032	-	1,032	5	-	5	1,037	-	1,037
Technical assistance:									
Mgmt. Study	85	-	85	-	-	-	85	-	85
Long-term	540	-	540	-	27	27	540	27	567
Training	50	28	78	-	5	5	50	33	83
Other costs:									
A and E	230	-	230	-	77	77	230	77	307
Evaluation	13	-	13	-	-	-	13	-	13
Subtotal	3,163	548	3,711	110	179	289	3,273	727	4,000
Contingencies			473 (12.7%)			51 (18.0%)			524 (13.1%)
Subtotal			4,184			340			4,524
Inflation			560 (13.4%)			39 (11.5%)			599 (13.2%)
TOTAL			4,744			379			5,123

TABLE 5

Timing for AID Funding for Obligations, Commitments and Expenditures[1/]
(U.S. $000)

Component	FY 1979			FY 1980			FY 1981			FY 1982			FY 1983	
	Oblig.	Commit.	Expend.	Oblig.	Commit.	Expend.	Oblig.	Commit.	Expend.	Oblig.	Commit.	Expend.	Commit.	Expend.
1. Workshop Const. and Site Prep.	-	-	-	-	-	-	1,733	1,733	1,144	-	-	589	-	-
2. Workshop Equip.	1,032	-	-	-	1,032	-	-	-	1,032	-	-	-	-	-
3. Tech. Assist.:														
a. Mgmt Study	85	-	-	-	85	85	-	-	-	-	-	-	-	
b. Long-term	-	-	-	450	450	90	-	-	180	90	90	180	-	90
4. Training	-	-	-	78	21	21	-	29	29	-	26	26	2	2
5. Other Costs:														
a. A/E and Const. Super.	230	-	-	-	230	120	-	-	73	-	-	37	-	
b. Evaluation	-	-	-	-	-	-	-	-	-	13	13	13	-	
Subtotal	1,347	-	-	528	1,818	316	1,733	1,762	2,458	103	129	845	2	92
6. Contingencies[2/]	148	-	-	66	93	43	259	261	311	-	110	110	9	9
Subtotal	1,495	-	-	594	1,911	359	1,992	2,023	2,769	103	239	955	11	101
7. Inflation[3/]	5	-	-	206	211	111	308	308	350	41	34	92	7	7
TOTAL	1,500	-	-	800	2,122	470	2,300	2,331	3,119	144	273	1,047	18	108

1. Obligations are timed so as to precede the start of the procurement process of each component, commitments coincide with the proposed timing of contract execution, and expenditures are based on the anticipated timing of contract performance.

2. Contingencies are estimated at 8-20% depending on the component.

3. Inflation estimates of 8%/yr. for foreign costs and 10%/yr. for local costs are generally based on year of commitment.

IV. IMPLEMENTATION PLAN

This section consists of a discussion of project timing, project monitoring, and the responsibilities of the GOTG and the concerned AID offices. This is followed by a discussion of proposed procurement procedures and considerations.

A. Project Implementation Schedule

A proposed project implementation schedule is shown graphically in Figure 2 for the key project milestones. A more detailed list of project actions, events and responsibilities appears in Table 6.

In general, the grant agreement is expected to be executed in early July 1979 with contracting procedures starting immediately for the Management Study and the A/E workshop Engineering Design. The Management Study would start in January 1980, one month ahead of the A/E design in order to provide work-flow input to the A/E design team.

The training program recommended in the Management Study would be organized following government approval and review by the GOTG Training Officer in the six months following the study. The Technical Assistance team would arrive in September 1980 to help start up the training program and implement the supply system recommendations of the Management Study.

Parallel to the training management aspects of the project, the equipment procurement would proceed based on the specifications provided as part of the A/E study in April 1980. The equipment procurement procedure would commence then and equipment would be selected in October 1980 for delivery in October 1981, six months prior to completion of the new Central Workshop. The workshop construction is on the critical path so that prequalification of contractors and preparation of the call for bids will proceed in parallel to the engineering design which is scheduled to finish in September 1980. The call for bids should then go out as soon as the design is completed and approved. This results in an estimated April construction start in 1981 and completion in April 1982. The technical assistance and training aspects of the project will continue until October 1983 with a project evaluation in December 1982 or eight months after workshop completion.

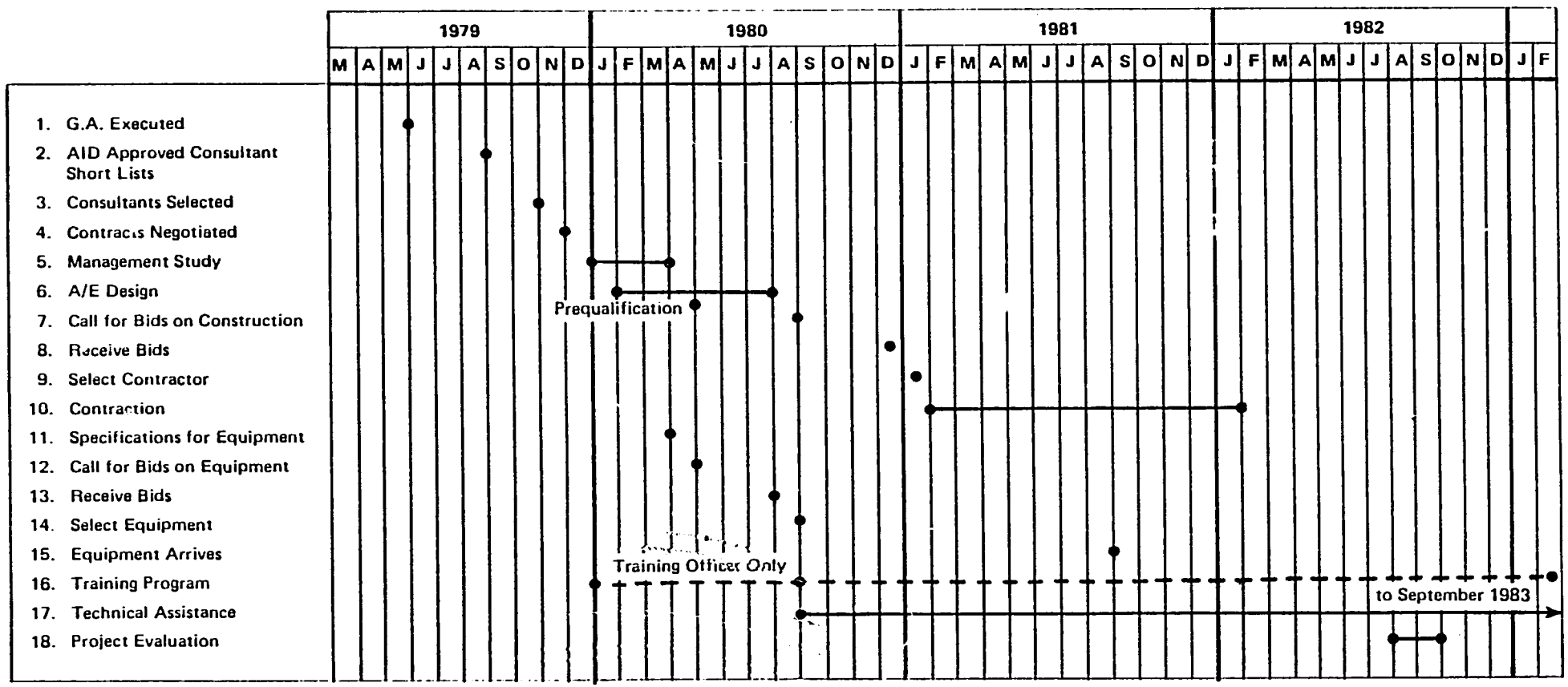
B. Procurement Plan

1. Responsible Agency

All procurements under this project will be conducted by the Public Works Department of the Ministry of Works and Communications, Government of Gambia (PWD), which hereby requests

FIGURE 2

IMPLEMENTATION SCHEDULE



that such procurement be effected through the AID Principal Officer in Banjul. Upon acceptance of this Procurement Plan by AID, the Ministry of Works and Communications will designate the officials responsible for procurement actions.

2. Procurement Services Agent (PSA)

In view of the large value of anticipated purchases in the U.S. and the extensive number of line items to be procured, the Ministry of Works and Communications will appoint a professional PSA to undertake U.S. source procurements. It is expected that MWC will negotiate a procurement services contract with a company such as the Afro-American Purchasing Center (AAPC), One World Trade Center, New York, N.Y. 10048. This appointment will be finalized within 30 days of AID's acceptance of this Plan. While the MWC is aware that it would be desirable to solicit offers from qualifying firms prior to selecting PSA, time constraints dictate the selection of AAPC, without additional solicitation. The MWC is aware that AAPC is qualified to act as PSA and has AID's approval to work in this capacity.

3. Equipment List

The project paper contains a general listing of equipment and commodity needs for the project. As soon as practical, after AID's acceptance of this plan, PWD will, with the assistance of the A/E contractor provided for in the PP, prepare detailed specifications for the equipment to be procured. It will contain probable source of purchases and estimated costs. Cost estimates will take into consideration delivery costs, PSA fees and an allowance for inflation. Waiver requirements, if any, will be reviewed by AID/Banjul and submitted to AID for approval. Only items included on the list, as may from time to time be amended and approved, will be eligible for project financing.

4. Source of Procurements

The general source/origin rule for this project will be the U.S., the Gambia and Code 941 countries since the Gambia is an RLDC. Any waivers of this general rule will be made in advance and on a case-by-case basis by AID.

a) On the basis of the approved equipment list, PWD will prepare PIO/Cs to cover procurements.

b) PIO/Cs will be issued on behalf of PWD by AID/Banjul.

c) PIO/Cs will be distributed as needed, to initiate the procurement flow.

d) In case of U.S. source, AAPC will conduct all procurements.

e) In case of authorized local source and shelf item procurements, PIO/Cs will be established against which purchase orders will be issued.

f) Title to all commodities acquired under this grant rests with the Government of the Gambia.

g) Invitations for Bid (IFB) are required for all procurements over 50,000 dollars. IFBs for local procurements will be prepared by PWD and submitted to AID for approval. Advertizing of anticipated U.S. procurements will be prepared by PWD through AAPC and will be forwarded to AID/W for insertion in appropriate publications.

h) Awards for all U.S. and other Code 941 purchases, as well as local procurements of $50,000 and over, will be made by PWD and will be subject to AID approval in advance.

i) The PWD will be responsible for proper receipt and expeditious utilization of items purchased.

5. Payment

Responsibility for payments will be with the AID Controller/Dakar. The Controller will periodically establish, through AID/W, a direct letter of commitment in favor of AAPC, which will then pay for all U.S. source purchases. Payments for all non-U.S. purchases will be made by the Controller/Dakar as follows:

a) In case of local procurement, upon presentation of seller's invoice, showing items, price and origin, with acknowledgement of receipt by PWD.

b) In case of other non-U.S. procurement, upon presentation of

- clean ocean bill of lading
- copy of packing list
- copy of suppliers invoice

c) Small value local procurements (under $500), such as shelf items, will be paid by the AID Controller from a local currency fund established for this purpose.

6. Delivery

All imported goods will be shipped on the basis of CIF Banjul. Suppliers will be required to obtain all risk marine insurance in the amount of 120% of the CIF cost of the goods. AID's shipping requirements will be observed. Air freight shipments, when needed, will be initiated by PWD, subject to AID's prior approval.

7. Marking

PWD is aware of AID's marking requirements and will enforce it in all procurement actions.

8. Receipt and Utilization

PWD will be responsible to monitor arrivals and clear goods from customs, including payment of port charges in Banjul.

PWD will be responsible for the inspection of arrivals and for the preparation of receiving reports. Reports of shortages or damages will be forwarded to AAPC together with documentation necessary for filing insurance claims. PWD will ensure prompt and proper utilization and will submit to AID/Banjul quarterly utilization reports.

9. Waivers

No waivers are requested at this time. However, if advertising the contract for construction of the new workshop fails to elicit a response from qualified U.S., Gambian or Code 941 firms or the bids exceed the funds allocated for this purpose, a waiver to Code 935 will be sought.

TABLE 6

Project Implementation Schedule and Responsibilities

Activity	Schedule	Action/Agency
A - P.P. and G.A.		
Complete P.P.	0	Consult./AID
Project Review Meeting	0 + 0.5	AID/W
Grant Authorization	0 + 2.5	AID/W
G.A. Executed	0 + 3.5	AID/Banjul/GOTG
Initial CPs Met	0 + 5.0	AID/W
B - Studies		
Prequalification Notice in CBD	0 + 3.0	GOTG/AID/Banjul (REDSO)
Receipt of Prequalification Forms	0 + 4.5	GOTG
Short List	0 + 5.5	GOTG
AID Approval	0 + 6.0	AID/Banjul (REDSO)
Issuance of RFTP	0 + 6.5	AID/Banjul (REDSO)
Receipt of RFTPs	0 + 8.0	GOTG
Selection of Consultant	0 + 8.5	GOTG
AID Approval	0 + 9.0	AID/Banjul (REDSO)
Negotiation & Award	0 + 9.5	GOTG
AID Approval	0 + 10.0	AID/Banjul (REDSO)
Management Study Starts	0 + 10.5	Consultant
A.E. Design Starts	0 + 11.5	Consultant
Management Study Ends	0 + 13.0	Consultant
A.E. Design Ends	0 + 17.0	Consultant

TABLE 6

Activity	Schedule	Action/Agency
C - Training Program		
Training Officer in Place	0 + 10.0	GOTG
Training Program Fully Implemented	0 + 13.0	GOTG/Consultant
D - Workshop Equipment		
Equipment Specifications	0 + 13.0	Consultant
Select Purchasing Agent	0 + 13.5	GOTG/AID
Call for Bids	0 + 14.0	P. Ag.
Receive Bids	0 + 17.0	P. Ag.
Select Equipment	0 + 18.0	P. Ag./AID
Equipment arrives Banjul	0 + 30.0	GOTG
E - Technical Assistance		
Order of Service	0 + 17.0	GOTG
Technical Asst. Starts	0 + 18.0	Consultant
Technical Asst. Ends	0 + 54.0	Consultant
F - Workshop Construction		
Advertize for Prequal. of Contractors	0 + 15.0	GOTG/AID/Banjul (REDSO)
Receipt of Prequal. Data	0 + 16.5	GOTG
Short List	0 + 17.5	GOTG
Short List Approved	0 + 18.0	AID/Banjul (REDSO)
I.F.B. Prepared	0 + 18.0	Consultant/GOTG
I.F.B. Approved	0 + 18.5	AID/Banjul (REDSO)

TABLE 6

Activity	Schedule	Action/Agency
F - Workshop Construction (cont'd)		
I.F.B. Issued	0 + 19.0	GOTG
Bids Received	0 + 22.0	GOTG
Contract Award	0 + 23.5	GOTG
Contract Approved	0 + 24.0	AID
Start of Construction	0 + 24.5	Contract.
End of Construction	0 + 36.5	Contract.
G - Program Evaluation		
Evaluation Mission	0 + 44.5	AID/Banjul (REDSO) (AID/W)

V. EVALUATION PLAN

The general goal of the multi-donor project to which this AID project is expected to contribute is improved economic well-being and quality of life for the rural population of The Gambia. This goal is expected to be achieved in three ways:

1. Improved workshop performance will increase the effectiveness of the country's road maintenance program by reducing equipment down time and the cost of repairs and by extending the effective life of vehicles and equipment used for road maintenance. In turn road maintenance will reduce user costs, resulting in savings to transporters, traders, private vehicle operators, and the government. These user cost savings will then be passed on to rural producers and consumers in the form of reduced transport tariffs, reduced prices for consumer goods, and increased service delivery in rural areas.

2. Improved workshop performance will increase the effectiveness of rural service delivery by ministries using the PWD motor pool, by reducing vehicle down time and the cost of repairs and by extending the effective life of vehicles in the PWD motor pool. A key assumption here is that the increased availability of vehicles will be translated by the ministries concerned into increased service delivery in rural areas. The official policy of decentralization as expressed in the Five Year Plan is one *a priori* reason for supposing that this linkage will be effective.

3. Improved workshop performance will expand the absorptive capacity of the country for development assistance. Building the institutional capabilities of the PWD will also contribute to the development of human resources in The Gambia. This in turn will facilitate the overall development process through which an improvement in the quality of life of AID's target population will be attained.

The key variable in this process is improved workshop performance. It is expected that workshop performance will be improved as a result of the following AID inputs:

1. Construction of a new workshop facility.

2. Provision of a new workshop tools and equipment.

3. Design and implementation of an equipment maintenance management system.

4. Design and implementation of an ongoing training program.

The anticipated flow of project consequences from inputs to final results is shown schematically in Figure 3. The task of an evaluation program will be to verify each link by comparing measurements of change over time in selected indicators.

The AID project manager will complete a Project Appraisal Report (or equivalent document) annually. The PARs will be concerned primarily with timely provision of inputs, progress being made towards obtaining the outputs, and whether there are implementation problems. The PARs will be based on information provided by the technical assistance team in regular monthly reports as well as on the project manager's own knowledge of the project obtained from regular visits to the site and meetings with PWD personnel and members of the team.

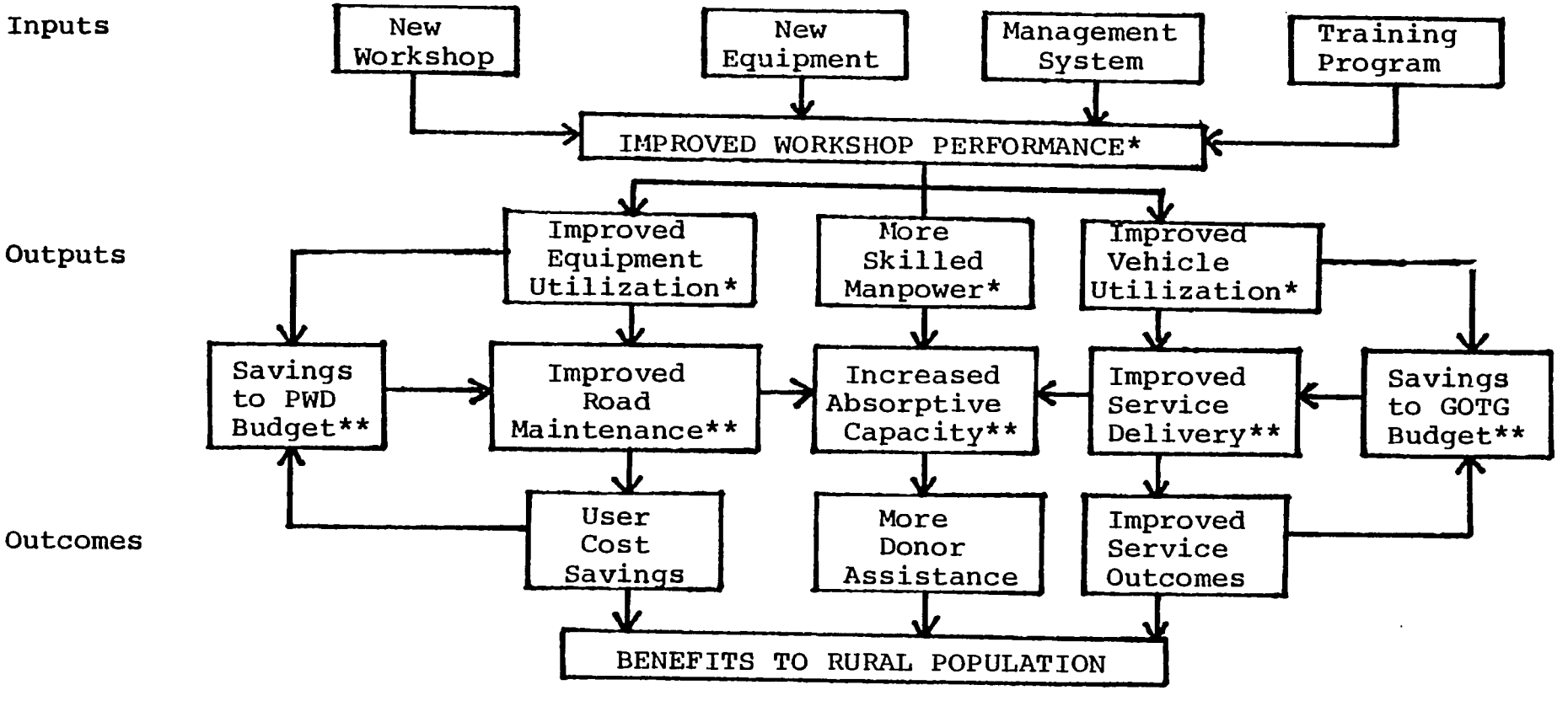
Through GOTG coordination the reports of World Bank supervisory missions on the road maintenance program will be made available to the AID project manager. These reports should show whether or not improvements in workshop performance are contributing to the effectiveness of the road maintenance program. Any bottlenecks identified by the World Bank as constraints on the successful implementation of the road maintenance program should receive special attention from the AID project manager and the technical assistance experts responsible for implementation of the equipment maintenance management system.

To insure continous monitoring of improvements in workshop performance, the consultants employed to carry out the Equipment Maintenance Management Study at the beginning of the project will be asked to design specific performance objectives and measures for workshop operations, vehicle and equipment utilization, and for the training program. The consultants will also be expected to collect baseline data on these performance measures at the start of the project.

The record keeping and data processing systems devised by the consultants should make it possible to produce measures of performance at regular intervals in order to provide continuous monitoring of project progress. It will be the responsibility of the Equipment Management Systems Specialist to report and analyze these data at least annually and to adjust project implementation procedures accordingly. Since improvement in workshop performance is the key element for evaluation, and all other benefits will derive from this improvement, special attention must be devoted to its measurement.

FIGURE 3

CAUSAL MODEL OF PROJECT BENEFITS



* Primary benefits to be monitored annually.
** Secondary benefits to be evaluated in FY 82.

A midstream evaluation is scheduled for FY 82, after the new workshop is opened. Funds for this evaluation effort are provided in the project budget, to cover up to six weeks of consultant services. This evaluation should focus on the secondary linkages leading from improved workshop performance (assuming that this has been achieved) to progress in the direction of AID objectives. These would include: institutionalization of the equipment maintenance management system and the ongoing training program in the PWD; development of institutional capacity in the MWC and in other ministries making use of PWD vehicles; development of local contractor capabilities; and the effectiveness of road and vehicle maintenance as incentives for decentralization of government activity and increased service delivery in rural areas. It is expected that this evaluation would focus on institutional outcomes rather than on direct impacts on the poor majority of The Gambia.

This evaluation should explore in greater detail the potential for "spread effects" from the management system and the manpower development program implemented in the PWD to other parts of the MWC and to other agencies and ministries. The relationship between this program and the GOTG's overall program in the areas of manpower planning and human resource development should be assessed. In particular, the opportunities offered by the establishment of a Technical Institute and a Management Development Institute in The Gambia should be studied as a framework for possible dissemination of the lessons lerned from the project experience.

The proposed project does not contain funds to evaluate whether or not the benefits of improved road maintenance are translated into economic savings to rural producers and consumers. Such a study would be interesting, but the expected time frame for benefits to "trickle down" would be too long for such a study to be meaningful within the project period. In addition, it would be difficult to determine the share of such benefits which should be attributed to the AID role in the multi-donor project. A study of user savings would also have to take into account the impact of a number of exogenous factors such as changes in peanut pricing policy and purchasing procedures, changes in the price of fuel, and shifts from non-motorized to motorized transport. The complexity and cost of such a research effort appear not to be warranted by the potential usefulness of the findings for policy purposes.

AID may wish to finance a post-project evaluation within two to three years following project completion, to assess whether the PWD is effectively maintaining the training and management systems developed during the project and to determine whether some additional assistance may be in order. AID may also wish to reassess the feasibility of a project in the area of feeder road maintenance at that time.

In summary, the evaluation program will focus on evaluating the primary benefits and costs of investment in equipment maintenance through an annual monitoring program. Certain of the more measurable indirect benefits will also be considered in a one-time evaluation effort at the end of FY 82 to determine if the institutional changes predicted for the proposed program have taken place, or if not, what further constraints must be addressed. The FY 82 timing will allow AID/Banjul to identify an FY 84 project continuation, if desired.

ANNEX 1

AID 1020-28 (1-72)

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 79 to FY 83
Total U.S. Funding $4,610
Date Prepared: March 23, 1979

Project Title & Number: Gambia Rural Roads Maintenance (635-0206)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program or Sector Goal: The broader objective to which this project contributes: Improved economic well being and quality of life for the rural population of the Gambia.	Measures of Goal Achievement: Higher accessibility between rural production centers and their markets. Lower transport costs for rural products. Higher accessibility of rural public services.	IBRD Project Evaluation Reports Independent Evaluation Survey.	Assumptions for achieving goal targets: IBRD Road Maintenance program in effective operation. Road transport industry responds to better conditions by reducing prices. Public services respond to better road conditions by improving rural service delivery.
Project Purpose: Improved public service vehicle and road maintenance equipment operation and maintenance. Better trained vehicle and equipment maintenance personnel. Improved maintenance management.	Conditions that will indicate purpose has been achieved: End of project status. More extensive rural road maintenance. Better rural road surface condition. Less vehicle downtime. More efficient vehicle and equipment maintenance activities. More efficient spare parts procurement and distribution.	Annual Project Appraisal Report Annual IBRD Project Evaluation Reports	Assumptions for achieving purpose: New facilities and trained personnel are used effectively by PWD. Technical Assistance is effective. Training program is effectively implemented. Government improves spare parts procurement. Program complements IBRD activities in road maintenance.
Outputs: Improved Vehicle and Equipment Maintenance Management System Study Training Program for Maintenance System New Workshop and Equipment More efficient Spare Parts Procurement	Magnitude of Outputs: - 1 system - on-the-job training all staff - 20 trainees/yr basic mechanics and accounting - 8 manufacturers short courses - 1 fully equipped central workshop - improved equipment in 3 regional workshops - 1 system	Annual Project Appraisal Report Consultant Reports	Assumptions for achieving outputs: Study recommendations are effectively implemented by PWD. Technical assistance is effective. Government cooperates in implementing training program. Government cooperates in improving spare parts procurement.
Inputs: Vehicle and Equipment Maintenance Management System Study Engineering Design and New Workshop. New Workshop Construction. New Workshop Equipment Technical Assistance Training Equipment Training Program Staff.	Implementation Target (Type and Quantity) one set of recommendations one set of plans and specifications one central workshop 121 pieces of equipment 6 person-years $11,600 $75,000	Annual Project Appraisal Report, Consultant Reports	Assumptions for providing inputs: Government provides: - workshop site and preparation - counterparts - training program staff Government approves plans, specifications and recommendations.

5C(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. Yes.
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.
3. 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?	3. Yes. It is a democratically elected government.
4. 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?	4. No.
5. 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?	5. No.

A

6. FAA Sec. 620(a), 620(f); App. Sec. 107, 114. Is recipient country a Communist country? Will assistance be provided to the Socialist Republic of Vietnam, Cambodia, Laos, Cuba, Uganda, Mozambique, or Angola?

6. No. No assistance will be provided to the countries listed.

7. 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?

7. No. The Gambia has no army.

8. 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?

8. No.

9. 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?

9. No.

10. 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?

10. No seizure, sanction or penalty has ever been imposed against U.S. fishing activities within international waters.

11. FAA Sec. 620(q); App. Sec. 503. (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?

11. No AID loan has ever been made to the Gambia.

12. FAA Sec. 620(s). "If contemplated assistance is development loan (including Alliance loan) or security supporting assistance, has the Administrator taken into account the percentage of the country's budget which is for military expenditures, the amount of foreign exchange spent on military equipment and the amount spent for the purchase of sophisticated weapons systems?" (An affirmative answer may refer to the record of the taking into account, e.g.: "Yes as reported in annual report on implementation of Sec. 620(s)." This report is prepared at the time of approval by the Administrator of the Operational Year Budget.

12. The project is entirely grant funded.

Upward changes in the Sec. 620(s) factors occuring in the course of the year, of sufficient significance to indicate that an affirmative answer might need review, should still be reported, but the statutory checklist will not normally be the preferred vehicle to do so.)

13. 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?

13. No.

14. 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?

14. Up to date.

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

15. No.

16. 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?

16. No.

17. FAA Sec. 669, 670. *Has the country, after August 3, 1977, delivered or received nuclear enrichment or reprocessing equipment, materials, or technology, without specified arrangements or safeguards? Has it detonated a nuclear device after August 3, 1977 although not a "nuclear-weapon State" under the nonproliferation treaty?*

17. No.

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

18. No.

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, through the Country Development Strategy Statement exercise.

B1

b. FAA Sec. 104(d)(1). *If appropriate, is this development (including Sahel) activity designed to build motivation for smaller families in programs such as education in and out of school, nutrition, disease control, maternal and child health services, agricultural production, rural development, and assistance to urban poor?*

1.b. Yes.

c. 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.

1.c.1. The goal of the development plan is self-sufficiency in food crop production.

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

1.c.2. The Gambia encourages foreign and private investment and provides investment incentives.

(3) Increasing the public's role in the developmental process.

1.c.3. The Gambia is a parlimentary democracy.

(4) (a) Allocating available budgetary resources to development.

1.c.4.a. The Gambia development budget has risen severalfold as a percentage of GDP.

(b) Diverting such resources for unnecessary military expenditure and intervention in affairs of other free and independent nations.

1.c.4.b. The Gambia has no military forces hence no defense budget.

(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.

1.c.5. The Gambia is minus in this direction but this area poses no externally imposed constraints in the Gambia.

(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.

1.c.6. This is the core theme of the current development plan.

d. 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?

1.d. Yes.

e. FAA Sec. 115. Will country be furnished, in same fiscal year, either security supporting assistance, or Middle East peace funds? If so, *has Congress specifically authorized such use of funds, or* is assistance for population programs, humanitarian aid through international organizations, or regional programs?

1.e. No.

B

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?

2.a. The Gambia has one of the best human rights records in Africa.

b. FAA Sec. 531. Is the Assistance to be furnished to a friendly country, organization, or body eligible to receive assistance?

2.b. Yes.

c. FAA Sec. 533(c)(2). *Will assistance under the Southern African Special Requirements fund be provided to Mozambique, Angola, Tanzania, or Zambia? If so, has President determined (and reported to the Congress) that such assistance will further U.S. foreign policy interests?*

2.c. The Gambia is not in this category.

d. 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?

2.d. N/A.

e. App. Sec. 113. *Will security assistance be provided for the purpose of aiding directly the efforts of the government of such country to repress the legitimate rights of the population of such country contrary to the Universal Declaration of Human Rights?*

2.e. No.

f. FAA Sec. 620B. *Will security supporting assistance be furnished to Argentina after September 30, 1978?*

2.f. N/A.

5C(2) - PROJECT CHECKLIST

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

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

A. GENERAL CRITERIA FOR PROJECT.

1. App. Unnumbered; FAA Sec. 653(b); *Sec. 671* (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	1.a. Project was described in FY79 Congressional Presentation. b. Yes.
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. Legislative action is not required.
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 *the Principles and Standards for Planning Water and Related Land Resources dated October 25, 1973?*	4. Not applicable to this project.
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. Yes.
6. 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 bilateral but is part of multilateral project. The mechanism is parallel funding.

A

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. Of these objectives, the project is most likely to achieve (e) efficiency of agriculture and commerce.

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. The project will have no direct effect except for U.S. source procurement of goods and services under the project.

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. The local cost elements have been thoroughly analyzed by AID and the multilateral donors, and the GOTG has agreed to its obligations.

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. The Gambia is not an excess currency country.

11. *ISA 14. Are any FAA funds for FY 78 being used in this Project to construct, operate, maintain, or supply fuel for, any nuclear powerplant under an agreement for cooperation between the United States and any other country?*

11. No.

B. FUNDING CRITERIA FOR PROJECT

1. Development Assistance Project Criteria

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

1.a. This is the very essence of the project: to stimulate rural growth by facilitating access to and from rural areas.

b. Village level benefits will help the rural poor receive GOTG services and have increased access to markets, goods and services resulting from better access.

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.]

(1) [103] for agriculture, rural development or nutrition; if so, extent to which activity is specifically designed to increase productivity and income of rural poor; [103A] if for agricultural research, is full account taken of needs of small farmers;

(2) [104] for population planning or health; if so, extent to which activity extends low-cost, integrated delivery systems to provide health and family planning services, especially to rural areas and poor;

(3) [105] for education, public administration, or human resources development; if so, extent to which activity strengthens nonformal education, makes formal education more relevant, especially for rural families and urban poor, or strengthens management capability of institutions enabling the poor to participate in development;

(4) [106] for technical assistance, energy, research, reconstruction, and selected development problems; if so, extent activity is:

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

(b) to help alleviate energy problem;

(c) research into, and evaluation of, economic development processes and techniques;

(d) reconstruction after natural or 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.

N.A. All funds for this project will come from the Sahel appropriation, Section 121 of the Act.

5. Project Criteria Solely for Sahel Development Program

FAA/Sec. 121. How will this assistance contribute to the long-term development of the Sahel in accordance with the long-term multi-donor development plan for that purpose.

The project has been carefully planned to complement road maintenance activities which will be financed by the IDA and the EEC Special Action Fund. The multi-donor program will contribute to the development of the Gambia by facilitating marketing of agricultural commodities and general movement of people, goods, and services throughout the country. The ability of the GOTG to deliver services to rural areas is particularly expected to be enhanced. The multi-donor program flows from an analysis of the requirements of the Gambia's transport sector sponsored by CILSS.

B1b

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

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

1.c. Strict adherence to the 25 percent requirement is not applicable to SDP-funded projects As it happens, the GOTG contribution is estimated at seven percent.

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, *or is the recipient country "relatively least developed"?*

1.d. The Gambia is "relatively least developed."

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.

1.e. The project should make direct contributions to goals (2), (3), & (5).

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.

1.f. The project is carefully tailored to the development plan and requirement analyses of external donors, including AID.

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g. FAA Sec. 201(b)(2)-(4) and -(8); Sec. 201(e); Sec. 211(a)(i)-(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?

1.g. Yes.

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.

1.h. No significant effect is anticipated.

2. Development Assistance Project Criteria (Loans only)

2. N/A. Project is grant-funded.

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

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

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

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?

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?

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

3. Project Criteria Solely for Security Supporting Assistance

3. N/A. Project is grant-funded.

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

b. FAA Sec. 533(c)(1). *Will assistance under the Southern African Special Requirements Fund be used for military, guerrilla, or paramilitary activities?*

4. Additional Criteria for Alliance for Progress

4. N/A. Project is grant-funded.

[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?

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?

ANNEX 3

CERTIFICATION ON CAPACITY TO MAINTAIN AND UTILIZE

(Section 611(e) of the Foreign Assistance Act of 1961, as amended)

Project 635-0206, Rural Roads Maintenance, is designed to complement and reinforce a World Bank project in the same subsector. The AID project is predicated upon the implementation of the Bank segment. AID's chief focus will be upon vehicle maintenance, workshops, training, and management systems. Based upon my experience in, and knowledge of, foreign assistance projects in the Gambia, I certify that in my opinion the Gambia and its implementing agency will be able to maintain and utilize effectively the resources provided under this Project.

Douglas P. Broome

Douglas P. Broome
AID Operations Officer

ANNEX 4

THE REPUBLIC OF THE GAMBIA

HMJ/40589

Ministry of Works & Comms
Half-Die,
Banjul.

2nd April, 1979.

D.P. Broome, Esq.,
USAID Operations Officer,
Buckle Street,
Banjul.

Dear Sir,

HIGHWAY MAINTENANCE PROJECT

I have the honour to make a formal request to you for the assistance of USAID in respect of the above project as described in the project paper " GAMBIA RURAL ROADS MAINTENANCE" prepared by Louis Berger International Inc.

Yours faithfully,

M. B. WADDA
PERMANENT SECRETARY

cc: The Permanent Secretary
Ministry of Economic Planning &
Industrial Dev.
Banjul.

The Permanent Secretary
Ministry of Finance & Trade
The Quadrangle.

file/running file.

ANNEX 5

DRAFT AUTHORIZATION

The Grant Agreement will be drafted by the REDSO/WA Regional Legal Officer in coordination with AID/Banjul after approval of the Project Paper.

Proposed Conditions Precedent, Covenants, and Negotiating Status

1. Conditions Precedent

In addition to the standard conditions precedent, the following are recommended:

A. Prior to the disbursement of any AID funds under this grant, the GOTG shall advise AID that the agreements with IDA and the EEC have been signed.

B. Prior to the disbursement of AID funds for A/E services, the GOTG shall advise AID that all necessary legal and other measures have been taken to make the site described in Annex 12 of the PP available to the PWD for construction of the new workshop.

2. Covenants

In addition to AID's standard covenants, the following are recommended:

A. Prior to the arrival of the AID financed technical assistance team to implement the Equipment Maintenance Management Study, the Cooperating Country shall have created the position of training officer and nominated a candidate for the position.

B. The GOTG shall agree to nominate acceptable candidates for the positions of counterparts to the technical assistance team within one month of the arrival of that team. Similarly, if the Equipment Maintenance Management Study determines that counterparts from the Accounts and/or Stores Divisions of the MWC are required in order to implement successfully the recommendations of that study, the GOTG will nominate acceptable candidates within the same period.

C. The GOTG shall agree generally to ensure cooperation and coordination among the PWD, the Accounts and Stores Divisions of the MWC, and the Ministry of Finance so as to facilitate execution of the Equipment Maintenance Management Study as well as the implementation of the Study's recommendations. Likewise, the GOTG shall agree to give the PWD direct control over the storage and distribution of spare parts for equipment and vehicle maintenance.

D. The GOTG shall agree to carry out in a timely fashion the site preparation tasks described in Annex 12 to the PP, including construction of the access road and provision of all necessary utilities.

E. The GOTG shall agree to rehabilitate existing workshop equipment as specified in Annex 11 to the PP and to distribute it to the regional workshops when the new Central Workshop becomes operational.

F. The GOTG, in view of the importance of adequate maintenance and operation of the Central Workshop and of a continued training program to the accomplishment of the objectives of the multi-donor road maintenance program, shall agree to provide sufficient funds for those purposes in its annual operational budget for the PWD.

3. Negotiating Status

These conditions precedent and covenants have been discussed with representatives of the PWD, MWC, and the Ministry of Finance. No difficulty is anticipated in securing GOTG agreement to fulfill the proposed conditions.

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APPROVED BY AA/AFR:WNORTH
AFR/SFWA:DCHEAR
AFR/SFWA:DMILLER
AFR/SFWA:OJLUSTIG
AFR/DR:TCRAWFORD
AFR/DR/ENGR:TTUMARELLO
AFR/SFWA/SCPT:ARCLLINS
AFR/DP:WSPRIGGS
AFR/DR:JNIXON (DRAFT)
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E.O. 11652: N/A

TAGS:

SUBJECT: PID REVIEW - GAMBIA RURAL ROADS MAINTENANCE SYSTEM 635-0285.

1. A FORMAL PID REVIEW WAS HELD ON JULY 31, 1973, AND AA/AFR HAS TENTATIVELY APPROVED DEVELOPMENT OF THE PROJECT TO THE PP STAGE PENDING RECEIPT OF AN IEE. THE GENERAL CONSENSUS WAS THAT THE PID IS INTERNALLY CONSISTENT ALTHOUGH THE COMMITTEE REJECTED THE A PRIORI ASSERTION THAT 40 PER CENT OF PROJECT COSTS SHOULD BE COVERED BY AID. THE CRITERIA FOR AID PARTICIPATION SHOULD BE ESTABLISHED ON THE BASIS OF TECHNICAL AND ECONOMIC MERIT OF SPECIFIC PROJECT COMPONENTS. PID ALSO CONSISTENT WITH CLUB/CILSS STRATEGY.

2. THE COMMITTEE RECOMMENDED THAT THE NARRATIVE IN THE PROJECT PAPER INCLUDE:

A. A THOROUGH ANALYSIS OF THE RECURRING COSTS:

THE ANALYSIS SHOULD
INDICATE SOURCE OF FUNDING FOR RECURRENT COSTS ESPECIALLY THE FOREIGN EXCHANGE REQUIREMENTS AFTER TERMINATION OF AID AND OTHER DONOR INPUTS TO THE PROJECT. IN THIS CONTEXT, THE PP SHOULD ALSO STATE WHAT THE PROJECT'S IMPACT WILL BE ON

PRODUCTIVITY AND ON INCREASES IN THE NET TAX REVENUES OF THE GOTG.

B. TRAINING SHOULD BE INCLUDED AS A SEPARATE COMPONENT IN THE PP SINCE IT WILL BE CRITICAL TO THE ABILITY OF THE GOTG TO MAKE CONTINUING GOOD USE OF AID AND OTHER DONOR INPUTS. DESIGN TEAM SHOULD DEVELOP SPECIFIC OUTPUTS FOR THE TRAINING PROGRAM, DESCRIBE SOURCE OF TRAINEES, KINDS OF TRAINING TO BE PROVIDED, JOBS TRAINEES WILL OCCUPY, ETC. BUDGET FOR TRAINING SHOULD ALSO BE SEPARATE FROM THAT FOR TA. QUESTION OF ABILITY OF PWD TO RETAIN TRAINEES SHOULD ALSO BE ADDRESSED IN VIEW OF LOW SALARIES WHICH PWD PRESENTLY PAYING. IF THE GOTG PLANS TO PROVIDE INCREASED SALARIES OR OTHER INCENTIVES, THE IMPACT OF THESE ON THE RECURRING COSTS PROBLEM SHOULD BE ANALYZED.

C. IN VIEW OF THE INTEGRAL RELATIONSHIPS BETWEEN ROADS AND RIVER TRANSPORT IN THE GOTG, THE COMMITTEE SUGGESTED THAT THE AOO CONSIDER EXPANDING THE PROPOSED MAINTENANCE STUDY TO INCORPORATE THE MAINTENANCE OF WATER TRANSPORT FACILITIES. IN ANY EVENT, IT IS PRESUMED THAT THE SCOPE OF OVERALL PROJECT SHOULD BE PREDICATED ON LEAST COST CRITERIA OR ON INTERNAL RATE OF RETURN CRITERIA. USE SHOULD BE MADE OF THE IBRD STUDY SPECIALLY WITH REFERENCE TO DISTRIBUTION OF BENEFITS.

D. AN ORGANIZATIONAL/INSTITUTIONAL ANALYSIS OF THE PWD SHOULD BE INCLUDED IN THE PP. THIS SECTION SHOULD ADDRESS THE SUITABILITY OF THE ADMINISTRATIVE AND FINANCIAL SYSTEMS AND IDENTIFY THE IMPROVEMENTS REQUIRED, IF ANY, TO ASSURE THE FINANCIAL INTEGRITY OF THE MAINTENANCE SYSTEM. AID/W SUGGESTS DESIGN TEAM INCLUDE AN ORGANIZATIONAL AND METHODS SPECIALIST, A FINANCIAL ANALYST, AND A TRANSPORT ECONOMIST IF NOT ALREADY PROVIDED BY THE IBRD. FYI. AID/W AND THE IBRD EXPECT TO DISCUSS DESIGN TEAM REQUIREMENTS IN MID-AUGUST.

3. INITIAL ENVIRONMENTAL EXAMINATION (IEE) FOR THIS PROJECT SHOULD BE PREPARED AS SOON AS POSSIBLE. AIDTO CIRCULAR A-294 DATED 7/22/73 REQUIRES INCLUSION OF THE IEE IN THE PID. A FORMAL CONCURRENCE TO PROCEED WITH THE PP WILL BE FORWARDED TO AOO UPON RECEIPT OF THE IEE. VANCE

ANNEX 7

INITIAL ENVIRONMENTAL EXAMINATION

Project Location	:	The Gambia
Project Title	:	Rural Road Maintenance
Funding	:	$4,744,000
Life of Project	:	5 years
IEE Prepared By	:	Peter Cook
Environmental Action Recommended	:	Negative Determination
Concurrence	:	_____
		Title OIC, Gambia
Assistant Administrator's Decision	:	APPROVED _____
		DISAPPROVED _____
		DATE 6/13/79

II. IDENTIFICATION AND EVALUATION OF ENVIRONMENTAL IMPACTS

(See Attached Impact Identification and Evaluation Form)

A. Land Use

1. Changing the character of the land through:

a. Increasing the population.

The road rehabilitation aspect of the project will have a limited and mostly indirect effect on population. Improved access may bring improved health care which may, in turn, reduce infant mortality and the incidence of endemic diseases. Since, though, the roads already exist, in-migration and/or out-migration are not expected to be influenced significantly by returning them to on all season status.

b. Extracting natural resources.

There is no anticipation at this time that improved roads in the impact area will increase natural resources extraction. There are no known mineral deposits of commercially viable magnitude in the area.

c. Land clearing.

There will be no additional land clearing associated with the road maintenance project. It is not considered likely that the rural roads maintenance program will significantly increase or decrease the amount of land cleared for agriculture from the amount that would be cleared in the absence of the program.

d. Changing soil character.

The roads in the project already exist. One of the purposes of improving them is to allow for better and more controlled drainage and thus decreased erosion. The program should thus have some favorable impact on soil character. Soils washed from the road will be replaced and some regraveling will take place. No large scale soil displacement is planned or foreseen.

2. Altered natural defense.

None.

3. Foreclosing important and perhaps better uses of the land.

All of the roads in the project already exist. The program will thus have no significant impact in this regard. To the extent that better agricultural practices are introduced general land usage practices will be improved.

4. Jeopardizing man or his works.

None.

5. Other factors.

a. Borrow pit siting.

Borrow pits will be necessary along certain portions of the roads. They will be sited on unproductive land and no agriculture land will be affected. The IBRD/EEC Project Agreement will stipulate that they must be graded for drainage so that water will not collect. Since in most cases the borrow materials will be needed for periodic road maintenance, the pits will continue to be utilized indefinitely. Their number will be kept to the minimum.

b. Construction of buildings

Buildings to be constructed will consist of several workshops, offices, classrooms and office extensions on existing structures in the capital and several maintenance and storage facilities in other towns. The structures will be of standard design and landscaped in such a way as to minimize erosion. In view of the small number of structures involved and their wide geographical dispersion, their effects on the environment will not be significant.

B. Water Quality

1. Physical state of water.

There will be some erosion run-off from the roads in the project, but they already exist and one of the

purpose of improving them is to have better and controlled drainage, thus decreasing erosion. In addition, the roads are at considerable distances from each other and the cumulative effect in streams, rivers and lakes of the run-off in any geographical area will be minimal. To the extent that the road program, combined with the the introduction of other government services, enables farmers to adopt better cultivation techniques, the total erosion run-off will be reduced.

2. Chemical or biological states.

None.

3. Ecological balance.

None.

C. Atmospheric

1. Air additives.

None.

2. Air pollution.

During the dry season vehicular traffic over these roads will cause dust. This already occurs and cannot be avoided. Better maintenance will mean less dusty surfaces on gravel roads, but higher speeds will increase dust clouds.

3. Noise pollution.

The vehicles using the roads make some noise. This, though, is already occurring as the roads are already used when operable in the dry season. The ADT count even when the roads are all seasons will not be such as to make noise pollution a significant impact.

D. Natural resources

1. Diversion, storage or increased use of water.

Road drainage structures will cause minimal diversion of run-off water over short distances. There will be no alteration in major water channels.

2. Irreversible, inefficient commitments.

None.

3. Wildlife.

There are several game preserves in the project area and it is anticipated that improved access to this area will increase tourism. However, as stated earlier, the permanent population of the area is not expected to be influenced significantly by improving the roads. Consequently, the pressure on existing wildlife should not increase significantly. Poaching and the illegal traffic in ivory and animal skins is common in isolated areas. By controlling these activities and permitting the better management of game reserves the net effect of the roads should be positive.

E. Cultural

1. Altering physical symbols.

The road maintenance program consists of rehabilitating already existing roads. No physical symbols of any culture are involved.

2. Dilution of cultural traditions.

No broad scale movement of large groups of people into presently settled areas is envisioned or likely. Easier access to markets and increased availability of government services such as education and health are likely to follow in the wake of the road maintenance program. These changes, while they will undoubtedly affect the lives of the peoples living near the roads, should not prove damaging to cultural traditions.

F. Socioeconomic

1. Changes in economic/employment patterns.

To maintain the roads local labor will be used to the extent possible thus increasing paid employment in rural areas adjacent to the roads. Agricultural programs should bring improved agricultural practices to areas up to 10 km on each side of these roads. Increased production and easier access to markets should lead to increased farmer income.

2. Movement, resettlement or changes in population.

   Improved access could cause some movement of people, but in terms of number such movement is expected to be minor.

3. Changes in cultural patterns.

   Improved access could impact on cultural patterns but since the roads in question have already existed for some time the change will not be great nor the impact significant.

G. Health

1. Altering or destroying a natural environment.

   None.

2. Eliminating an ecosystem element.

   None.

3. New pathways for disease vectors.

   The roads will increase movement of people and agricultural commodities in the area through which they pass. The chances of human, animal and plant disease vectors moving from area to area will be somewhat increased but are not expected to be significant. Increased medical and agricultural services which are to be provided by the government will help minimize these effects.

H. General

1. International impacts.

   None.

2. Controversial impacts.

   None.

3. Larger program impacts.

   The rural roads program will assist other development activities such as education, health, and agricultural

extension programs, to expand their range into currently poorly accessible areas. The road maintenance program, however, is only supportive of these other programs and does not form part of these programs. AID assistance is planned for several of these other development programs and the environmental assessment process is being or will be used for the design of these projects.

III. RECOMMENDATION FOR ENVIRONMENTAL ACTION

On the basis of the information supplied herein it is clearly indicated that the project will not have a significant effect on the environment and it is hereby recommended that a Negative Determination be made.

This project will help provide the capability for the GOTG to maintain rural roads which will allow better vehicular traffic into areas of rural Gambia currently without such access during part of the year. There will be minimal earth works; no restrictions or interdictions to animal movement and the roads will be widely dispursed throughout the countryside. In sum the environmental impact of the maintenance program will be very minimal and supports the recommendation for a Negative Determination.

Attachment A: IMPACT IDENTIFICATION AND EVALUATION FORM

Impact Areas and Sub-areas	Impact Identification and Evaluation 1/
A. LAND USE	
1. Changing the character of the land through:	
a. Increasing the population	L
b. Extracting natural resources	N
c. Land clearing	L
d. Changing soil character	L
2. Altering natural defenses	N
3. Foreclosing important uses	N
4. Jeopardizing man or his works	N
5. Other factors	
Borrow pit siting	L
Construction of building	L
B. WATER QUALITY	
1. Physical state of water	N
2. Chemical and biological states	N
3. Ecological balance	N
4. Other factors	

1/ Use the following symbols:
N - No environmental impact
L - Little environmental impact
M - Moderate environmental impact
H - High environmental impact
U - Unknown environmental impact

ATMOSPHERIC

1. Air additives ---------- N
2. Air pollution ---------- N
3. Noise pollution ---------- N
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 _____ _____

F. SOCIOECONOMIC

1. Changes in economic/employment patterns ---------- L
2. Changes in population ---------- L
3. Changes in cultural patterns ---------- L
4. Other factors _____ _____

G. HEALTH

1. Changing a natural environment ---------- N

2. Eliminating an ecosystem element ---------- N

3. Other factors

New Pathways for disease vectors L

H. GENERAL

1. International impacts ---------- N

2. Controversial impacts ---------- N

3. Larger program impacts ---------- N

4. Other factors

_____ _____

I. OTHER POSSIBLE IMPACTS (not listed above)

_____ _____

_____ _____

_____ _____

ANNEX 8

Economic Analysis Details

8.1 Introduction

As the program financed by AID is part of a multi-donor program geared toward improvement of the highway maintenance system in the Gambia, there are several possible approaches to its economic evaluation depending if one considers the direct benefits of the whole project (in terms of improved highway condition and reduced user costs) or the direct benefits of the AID part of the program (in terms of improved equipment maintenance and better equipment productivity).

Two methodologies will be successively considered in the present annex which give the details of the analysis whose main results are presented in Section III A.

8.2 Economic Evaluation Based on Improved Highway Maintenance

In this first approach, the AID project is considered as part of the global multi-donor program. No particular attempt is made to isolate what percentage of the benefits result from the AID program as this would be very subjective. After the evaluation of the global program, a marginal analysis is carried out to show that the AID program is economically justified on the basis of its marginal impact on the highway maintenance system in the Gambia.

Project Costs

The economic project costs expressed in 1979 U.S. dollars are presented on a yearly basis in Table 8-4. They are based on the AID program costs as established in the Technical Section of this Project Paper and on information provided by the World Bank concerning the IBRD-EEC financed project (procurement of equipment, spare parts and technical assistance).

Project Economic Benefits

The project benefits result from the user costs savings made possible by improved highway surface conditions.

The benefits have been computed for the highway maintenance program as presently defined, which consists of: (see details in Section II)

a. a four year program for the routine maintenance of 780 km of roads

b. a three year program of periodic maintenance on 190 km of roads.

The benefits computations basically follow the assumptions made by the World Bank in the appraisal of the first highway project in The Gambia. User costs are presented in Table 8-2 for gravel and paved roads in good, fair, and poor conditions.

It is assumed that the road condition of the 780 km of road involved in the program will be fair with the project, when they would have been poor without the project. Furthermore, it is assumed that the road condition will change from fair to good on those roads which benefit from periodic (backlog) maintenance (192 km).

The average traffic on the network covered by the program are given for years 1980/81 and 1982/83 in Table 8-1. The traffic growth rate used to make the projections is 5% per year. Total traffic volumes are expressed in terms of Passenger Car Units (P.C.U.) with the following equivalence:

1 PCU = 1 light vehicle

3 PCU = 1 heavy vehicle

The percentage of heavy traffic is 20% on paved roads and 25% on gravel roads.

Benefit computations for routine maintenance:

Total Benefits = 365 days (km x ADT x weighted average savings/veh-km) for paved and gravel roads

- 1980/1981

$$0.75^{*} \times 365\ (350 \underbrace{\times 1488 \times 0.015}_{\text{paved roads}} + 433 \underbrace{\times 221 \times 0.030}_{\text{gravel roads}}) = 2924 \times 10^{3}$$

*75% of total benefits are supposed to accrue in 1st year of program and 100% thereafter.

- 1982/1983

$$365\ (420 \times 1426 \times 0.015 + 363 \times 237 \times 0.030) = 4221 \times 10^{3}$$

Benefits are interpolated for the years 1981/82 and are supposed to grow at the same rate as traffic (that is 5%/year) until the end of the program.

Benefit computation of periodic maintenance:

o 1980/81

$0.75^{*} \times 365 \times 63^{**} \times 242 \times 0.03 = 125 \times 10^{3}$ U.S. $

*75% of total benefits are supposed to accrue during 1st year of program.

**63 km are reconditioned during 1st year.
63 km are reconditioned during 2nd year.
63 km are reconditioned during 3rd year.

o 1981/1982

$365 \times 126 \times 242 \times 1.05 \times 0.03 = 351 \times 10^{3}$ U.S. $

o 1982/1983

$365 \times 192 \times 242 \times 1.05^{2} \times 0.03 = 561 \times 10^{3}$ U.S. $

Benefits are assumed to grow at 5%/year until 1985.

Evaluation

As the evaluation period is short (ending in FY 1985) it is important to consider the residual values of the investment.

A residual value of 50% of the highway maintenance equipment devoted to periodic maintenance has been used. It has also been assumed that the workshop has a 30-year economic life and the workshop equipment a 20-year economic life. The resulting residual values (about 2.5 million dollars) are taken into account in 1986.

The economic feasibility is tested by computing the Internal Rate of Return (I.R.R.) of the project. That is the rate for which the present values of costs and benefits are equal. The I.R.R. of the project is 49.8% which clearly establishes its high economic feasibility. (See Table 8-3.)

Marginal Approach to Highway Maintenance Benefits

As mentioned earlier, it would be impractical to analyze separately the AID program in terms of its results on highway maintenance. Nevertheless, it is interesting to determine what would be the minimum impact on the highway maintenance system which would still justify the AID project. This can be done by computing the I.R.R. of the AID project for different percentage values of the total benefits previously considered. The

percentage of global benefits which confer a 10% I.R.R. to the AID investment was selected as the threshold for the minimum impact that the project must have on the highway maintenance program (expressed for example in terms of yearly mileage of maintained roads) to be justified.

It should be noted that these results are conservative because the indirect effects of improved maintenance of the equipment and light vehicles, which are not involved in highway maintenance, are not taken into consideration.

Table 8-4 shows the results of the computations. It appears that the project has at least a 10% I.R.R. if its impact on the benefits to the highway maintenance program is at least equal to 15% of total program benefits. In other words, if with the existing highway equipment maintenance system the highway maintenance program would be 15% less efficient than with the AID financed program, then the AID program appears economically justified.

8.3 Economic Evaluation Based on Improved Equipment Performance

By providing a new equipped workshop and support in the form of training and technical assistance, the project will have a direct effect on the maintenance of the fleet of equipment and vehicles which is the responsibility of the PWD. The time required to maintain and overhaul equipment will be lessened and the quality of this maintenance will be improved. Consequently, the availability of light vehicles and equipment will increase, and the successful implementation of the project will result in capital cost savings as the Government will be able to obtain the same required service with a smaller fleet of vehicles and equipment. These capital cost savings can be compared with the cost of the project to get an estimate of its economic feasibility on the basis of direct effect.

An estimate of the capital replacement cost of the fleet of light vehicles belonging to other ministries but maintained by PWD is given in Table 8-5. This fleet is presently composed of 450 vehicles and its replacement cost in 1982, assuming an average growth rate of 10%/year, would be approximately 10 million dollars. As far as the heavy equipment is concerned, it has been estimated that in 1982, the fleet will be composed of:

a. remaining existing equipment: whose replacement value is estimated at 6.6 million dollars on the basis of data furnished by the R.P.T. report (reference 9, p. 107)

b. IBRD procured equipment estimated at 2.2 million dollars.

The total replacement value of equipment would then be 6.6 + 2.2 = 8.8 million dollars.

Assuming that light vehicle life is on the average 5 years and that equipment life is on the average 8 years, and that the project will result in an conservative 30% increase in the fleet productivity, the savings for year 1982 would be about $900,000.

Internal Rate of Return computations are given in Table 8-6, taking into account a 20 year growth rate of 5% during this period. The computations show that the project's I.R.R. computed on the basis of the direct benefits from the improved performance of well maintained equipment is 23%. This rate of return is much higher than the estimates of opportunity cost of capital in the Gambia (ranging from 10% to 15%) and represents a good economic return for the project.

TABLE 8-1

Traffic Projections

I. Routine Maintenance

Traffic Range	1980/1981 Paved Weighted Aver. (v.p.d.)*	1980/1981 Paved Length (km)	1980/1981 Gravel Weighted Aver. (v.p.d.)	1980/1981 Gravel Length (km)	1982/1983 Paved Weighted Aver. (v.p.d.)	1982/1983 Paved Length (km)	1982/1983 Gravel Weighted Aver. (v.p.d.)	1982/1983 Gravel Length (km)
60-100			81	113			89	173
100-200			200	218			221	190
200-350	330	103	266	42	320	173		
400-550	542	144			596	144		
600-700	746	22			821	22		
2000-8000	3008	81			3316	81		
		350		433		420		363
Weighted average traffic in v.p.d.	1063		148		1019		158	
in p.c.u.*	1488		221		1426		237	

II. Periodic Maintenance

	L(km)	P.C.U. (1980/81)
Kerewan - Farafenni	57	243
Farafenni - Laminkoto	115	226
Yoroberi - Bansang	20	330
Kunda -		
Weighted Average	192	242

* v.p.d. = vehicle per day; p.c.u. = passenger car unit
= 1 light vehicle = 1/3 heavy vehicle

TABLE 8-2

Vehicle Operating Costs
(U.S. Dollar/km)

	Paved			Gravel		
	Good	Fair	Poor	Good	Fair	Poor
Passenger Car Unit (P.C.U.)	0.155	0.170	0.185	0.205	0.235	0.265

TABLE 8-3

Evaluation of Multi-donor Project
(000 U.S. $ 1979)

		Benefits			
Year	Costs	Routine Maintenance	Periodic Maintenance	Residual Value	Cash Flow
1979/80	3396				-3396
1980/81	3341	2924	125		- 292
1981/82	3373	4060	351		+1038
1982/83	1581	4221	561		+3201
1983/84	678	4432	589	500	+4843
1984/85	570	4656	619		+4703
1985/86	570	4886	649		+4965
1986/87				2507*	+2507

I.R.R. 49.8%

* Building: $\frac{25}{30}$ x 1987 = 1656

Equipment: $\frac{15}{20}$ x 1135 = 851

Total 2507

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NO. TABLE 8-3

TABLE 8-4

Impact of U.S. A.I.D. Program on Highway Maintenance
(000 U.S. dollars)

Year	Costs U.S. AID Program	Benefits* (as % of global project) 10%	20%	15%
1979/80	91			
1980/81	1925			
1981/82	2007	220	441	330
1982/83	252	478	956	717
1983/84	108	1002	1504	1253
1984/85	-	527	1054	790
1985/86	-	553	1106	829
1986/87	-	2507	2507	2507
I.R.R.		6.1%	17.5%	11.2%

* Including residual values of IBRD and AID programs. 75% of total benefits are assumed for 1981/82, 1st year of AID program.

TABLE 8-5

Non-PWD Vehicles & Equipment Maintained in PWD Workshop (Jan. 1979)

Type	Number	Estimated Replacement Cost (000 U.S.$)
Light vehicle	80	640
Landrover	166	2656
Bus	18	396
Trucks	111	2886
Other	75	112
Total	450	6690

Replacement value in 1982/83 (000 U.S.$)

$x(1.10)^4 = 9795$

TABLE 8-6

Economic Evaluation on the
Basis of Improved Equipment Maintenance

(000 U.S.$)

Year	Costs	Benefits	I.R.R.
1979/80	91		23.4%
1980/81	1925		
1981/82	2007		
1982/83	252	916	
1983/84	108	962	
1984/85		1010	
1985/86		1060	
1986/87		1113	
1987/88		1169	
1988/89		1238	
1989/90		1289	
1990/91		1353	
1991/92		1421	
1992/93		1492	
1993/94		1567	
1994/95		1645	
1995/96		1727	
1996/97		1814	
1997/98		1904	
1998/99		2000	
1999/00		2099	
2000/01		2204	
2001/02		2315 +662*	

*Residual value

Building: $\frac{10}{30} \times 1987 = 662$

Equipment: 0

Annex 9

Social Soundness Analysis

Methodology

The methodology used for the social soundness assessment of this project includes the following elements:

- identification of beneficiaries for each project component
- assessment of the relationship between project beneficiaries and AID target groups
- assessment of sociocultural factors affecting the success of the project in generating expected benefits
- assessment of potential "spread effects" of the project
- evaluation of the incidence of expected benefits among social groups

Project Beneficiaries

For the purposes of this analysis, the beneficiaries of the proposed project are divided into two groups. The first are the direct beneficiaries of the AID financed project, including PWD employees, other ministries served by PWD, and local contractor employees. The second group of beneficiaries includes all those who will benefit from improved road maintenance.

1. Direct beneficiaries. The following beneficiary groups may be identified:

- central and regional workshop employees
- other employees of the PWD mechanical engineering section, including equipment operators and pool vehicle drivers
- local subcontractor and employees engaged in construction of the new Central Workshop
- PWD management
- MWC management
- other ministries to which PWD supplies vehicles and vehicle maintenance and repair services

Central Workshop employees will benefit directly from an improvement in their working conditions and in the facilities available for them to make more effective use of their skills. It is likely that these benefits will be translated into improved output as employee morale improves and physical constraints to effective performance are removed. Workshop employees are highly motivated to perform well, but their ambitions are frustrated at the present time by the near total lack of tools, facilities and spare parts with which to demonstrate their skills. Improved use of space to rationalize the work flow and improved work programming procedures will also help to increase each individual's productivity and thus his job satisfaction.

Employees will also benefit from the proposed training program because it will give them an opportunity to upgrade their Civil Service status. The proposed program will not significantly increase PWD recruiting requirements; rather, it will focus on upgrading existing personnel. It is unlikely that the proposed training program will greatly increase turnover in the Public Works Department because there are presently few alternate employment opportunities for skilled workers with only a secondary education.

This evaluation would change if other ministries followed the lead of MANR and set up their own workshops to service their own vehicle fleets. In this case it is probable that some PWD employees would shift over to other ministries. This outcome is unlikely, however, due to the duplication of facilities which would be involved and the inefficiencies of small scale operation. In any case, it could be regarded as an intragovernmental transfer of resources and would not affect the social feasibility of the proposed project.

The extent to which other employees of the mechanical section, such as equipment operators and vehicle drivers, benefit from the project will be determined by two factors. Improved workshop performance should reduce breakdowns and speed up repairs, thus improving the productivity of these workers. By and large this will be perceived as a benefit by all concerned, as these employees, too, are frustrated at the present time by not being able to use their skills more effectively. Individual productivity should increase substantially at no increase in pay, but it is unlikely that the workload will increase to such an extent as to become a burden on the staff and generate resistance to the project.

A second way in which drivers and operators may benefit is from training opportunities, if these are offered to them under either the AID or the IBRD project. It is expected that training on the specific road maintenance equipment procured by IBRD will be provided as part of the package. The AID project will underwrite institutionalization of this training by providing a PWD Training Officer, a classroom and training equipment in the new Central Workshop, and funds for instructor training seminars. The

need for additional driver training is not apparent at the present time, but the possibility should be left open in case such a need is identified by the Training Specialist on the Equipment Maintenance Management Study team.

A total of $2.4 million is allocated for construction of the new workshop of which $987,000 is estimated to be the local currency cost. This largely represents the cost of local labor provided by a local contractor. The laborers will be unskilled, semi-skilled and skilled workers in concrete block construction and paving. Specialists such as electricians or plumbers may or may not be Gambian nationals. In any case, the money spent on a local contract will recirculate in The Gambian urban economy and will help to strengthen local contractor capability.

PWD management and, to a lesser extent, MWC management will benefit from improved working conditions in the new workshop, more efficient and effective performance on the part of mechanics, operators and drivers (thus releasing management time from day-to-day supervisory tasks to deal with longer range concerns), and improved management of Central Workshop operations through the design and implementation of an equipment maintenance management system. This project component will necessarily address the questions of spare parts procurement and distribution as well as general accounting procedures. Both of these extend the project scope outside of the PWD to include the Accounts and Stores divisions of the MWC Headquarters department. To the extent that training opportunities are offered to MWC Accounts and Stores personnel under this project, these divisions will receive an additional benefit.

The Public Works Department will also benefit administratively from an improved output in road maintenance under the IBRD project, some part of which can be attributed to the AID contribution in focusing workshop priorities and performance on the needs of the road maintenance program.

Finally, those ministries whose vehicles are supplied and repaired by PWD will benefit directly and substantially from improved workshop performance. This includes the Ministries of Economic Planning, Health, Education, Information, and Local Government. (However, it excludes the Ministry of Agriculture and Natural Resources, which has its own workshop.) Although, under present budgetary arrangements, these Ministries do not bear the costs of vehicle down time or repair (the PWD budget does) the efficiency of their operations particularly in rural areas is seriously hampered by the lack of vehicles in good running order. This vehicle shortage interacts with the poor condition of rural roads to create a major constraint on government activity in rural areas.

2. Indirect Beneficiaries. Indirect beneficiaries of the AID project may be divided into two classes: (a) road users (direct beneficiaries of the multi-donor project) and (b) rural producers and consumers (indirect beneficiaries of the multi-donor project).

The principal economic justification of the multi-donor project is the very substantial amount of road user cost savings expected as a result. The IBRD has not analyzed the distribution of these benefits except in a very general way. Recent information permits the more detailed analysis presented below under "Incidence of Benefits."

Road users include the following sub-groups: government vehicles; vehicles belonging to parastatal enterprises such as the Gambia Produce Marketing Board (GPMD), the Gambia Libya Public Transport Company (GLPTC), or the National Trading Company (NTC); privately owned trucks, buses and cars; diplomatic vehicles; and non-Gambian (largely Senegalese) traffic. Table 9-1 shows the composition of The Gambian vehicle fleet in 1976. Other road user groups include road maintenance equipment (plant); agricultural machinery (tractors); and non-motorized traffic (bicycles, animal drawn vehicles, and pedestrians). The proposed new road maintenance plant will consist of approximately 40 pices of heavy equipment, in addition to a few pieces of existing equipment which may remain in service. Time does not permit detailed investigation of the volumes of other non-vehicular traffic or the user cost savings which might accrue in these categories.

Table 9-1 shows that government vehicles (PWD and MANR) account for approximately 8% of the vehicle fleet and diplomatic vehicles for another 5%. Of the remainder, 23% are motorcycles, 30% are personal cars, about 3% are small taxis (engaged in public transport mainly in the urban area), 12% are large taxis (engaged in long distance public transport), about 1% are buses (mostly belonging either to GLPTC or to tourist enterprises), and 17% are trucks, of which a small share (about 5% in 1976) belong to GPMB. Thus there is a private sector of significant size engaged in small scale passenger and goods transport, as well as the large transport vehicles generally owned and operated by parastatals.

The number of non-Gambian vehicles using Gambian roads is not known, but the share of non-Gambian traffic is estimated in the National Transport Study (page 6-9) to be 75% on the Trans-Gambia Highway, 25% on the Banjul-Dakar road, and 12% on the road south from Banjul to Casamance (Senegal). It is negligible everywhere else in the country.

In addition to reducing road user costs, the IBRD project which this project supports will bring indirect economic and ocial benefits to the population of The Gambia. It is argued that these benefits accrue principally on the least trafficked roads and in rural areas served by feeder roads, since these are the areas which would be least likely to receive road maintenance service in the absence of the IBRD project. Due to the unusual geographical configuration of The Gambia, which is such that few human settlements can be located more than 15 kilometers from a major (primary or secondary) road it is assumed for this analysis that the entire rural population will benefit from the IBRD program.[1]

Relationship Between Project Beneficiaries and AID Target Groups

This project relates to AID development objectives for the Gambia in two major ways:

1. It will strengthen institutional capabilities in the GOTG.

2. It will facilitate improved service provision in rural areas.

To the extent that road user cost savings are passed throuh to rural producers and consumers, the rural population will also benefit. Given the present competitive nature of small scale transport in rural areas, it appears likely that such savings will eventually be passed on through a reduced rate of growth in transport tariffs.

The immediate beneficiaries of the AID project, PWD employees and local contractor employees, do not fall into the normal AID target group. As relatively well educated, wage earning members of the modern work force, they are among the relatively privileged minority of Gambians. But the desired improvements in GOTG institutional capability and in the quality of rural life cannot be achieved without taking into account the needs of this class, which must become the instrument of future development efforts. The GOTG, CILSS, and other donors have accepted this view, and seek actively to promote the growth of middle level manpower, which is correctly seen as a key constraint on expansion of the economy.

[1]One possible exception would be the population on the north bank of the river and east of Basse, whose primary road link (Yorobawal-Fatoto) is not included in the Bank's program. This amounts to less than 5% of the rural population of The Gambia, but it is certainly among the poorest of the poor. On the other hand, the primary road is not even constructed to all-weather standards, and traffic levels are extremely low. Thus maintenance operations on this section of the primary network are not economically feasible.

The benefits accruing to PWD, MWC and other ministries are in line with AID objectives in the area of institutional development. Real savings will accrue as vehicles and equipment are used more efficiently and effectively, and better management procedures may be instituted as a result. The combination of improved road maintenance and improved vehicle maintenance should act as an incentive to these Ministries involved in rural development to permit greater decentralization of their activities and more use of vehicles in rural areas.

The direct and indirect beneficiaries of the road maintenance project include, but are not limited to, the members of the poor majority in the Gambia. The focus of the multi-donor project on backlog maintenance of gravel roads increases the likelihood that benefits will flow to small scale transporters and traders rather than to large trucks and buses, which generally prefer to stay on paved roads. The links scheduled for backlog maintenance (Kerewan-Farafenni and Farafenni-Laminkoto) will reinforce the importance of Farafenni, selected by the GOTG as one of two regional growth centers. (The other, Basse, will be served by major road improvements-paving of Soma-Basse and gravelling of Basse-Fatoto-during the project period.)

Sociocultural Feasibility

The analysis of sociocultural feasibility for this project covers the following topics:

- social composition of the target population
- PWD track record in road and equipment maintenance
- values, attitudes, and motivation of project participants
- participation of beneficiaries in project planning
- potential opposition to the project
- communications strategies for use in the training program

1. Social composition. The principal social distinctions in the Gambia are ethnic, religious, and economic in origin. These cleavages are generally cruss-cutting rather than reinforcing, and there is a relatively low level of social conflict in the country.

The GOTG has followed a policy of careful balancing of social groups in making appointments to the Civil Service. Consequently, no single social group is predominant in the pool of Public Works Department personnel (or other government services). In addition, the PWD has made an effort to stick to measures of achievement rather than ascriptive characteristics as qualifications for

promotion within the Department. The result is a rather remarkable blend of Gambians from different social backgrounds who work well together on technical matters, who have acquired a common culture through education in the national (English language) school system, and who share participation in the relatively small modern sector of the economy.

There may be an important distinction between the older members of the PWD staff, technically competent but only marginally literate, and the younger staff who are secondary school leavers with highly developed verbal skills and a distinct lack of technical skills. Training programs must be carefully designed so as not to alienate either of these groups. Respect should be shown for the technical achievements of the older group, and they should be encouraged to develop communications skills so that they can function effectively as on-the-job trainers. At the same time, promotion opportunities should be clearly tied to demonstrations of technical competence, and considerations of seniority should not be allowed to stifle all hope for progress by the younger set.

There is no reason to suppose that the more indirect impacts of the proposed program would discriminate among social groups. To the extent that the project benefits rural rather than urban areas (which would get road maintenance anyway), it will help to redress an old and well understood social injustice and will reinforce the social objectives expressed in the Five Year Development Plan. The incidence of economic benefits is discussed in greater detail below.

The different tribal groups of the Gambia are sprinkled about the country in a fragmented pattern, the result of many village splits and short distance migrations to unoccupied lands. Thus, there is approximately equal access to the road network and to the services it brings. Possible differences among ethnic groups in the propensity to take advantage of these services (and thus to receive project benefits) are not considered significant for this analysis.

2. PWD Track Record. The PWD has unfortunately a mixed reputation in vehicle maintenance. Although the repair work is good when it is done, long delays in repair are frequent. It has been more effective in road maintenance, where, with limited resources, it has generally managed to keep the network for which it is responsible in reasonably good condition. The recent deterioration of the roads which this project is designed to address stems largely from unexpected increases in traffic volumes and from the inability of the PWD to replace or repair obsolete road maintenance equipment. This difficulty in turn derives from a lack of foreign exchange to purchase equipment and spare parts, which is ultimately traceable to the economic difficulties characteristic of Sahelian countries.

The poor physical characteristics of the present Central Workshop undoubtedly contribute a good deal to the PWD's problems. Lack of protection from rain and dust, poor lighting, work areas crowded with deadlined or junked vehicles have made it extremely difficult for the mechanical staff to perform effectively. In addition, it must be said that the present site presents major security problems. Parts, tools, and even items of shop equipment have a way of disappearing, and in the present site little control can be exercised over the occupants. (The VTC across the street has suffered from a similar problem.)

3. Values, attitudes, and motivation of PWD personnel. Based on brief observations of the central and regional workshops, it would appear that the PWD staff values its equipment and wants to use it properly, though they may not always know how. There is a tendency to want to use tools for tasks other than those for which they were designed (and, often, for tasks which are not a PWD responsibility). This situation could be ameliorated through training and provision of adequate, appropriate tools as well as increased security procedures and enforcement of the regulations regarding jobs for which each shop should be responsible.

Generally, vehicles and plant equipment are well treated by their operators. There is evidence of vehicles being brought in at the appropriate time for routine maintenance; though, if replacement parts are not available and the vehicle is still functioning, they are likely to be put back into service without a complete overhaul. Gambians appear to be good drivers in comparison to other Africans, road safety conditions are good and accidents are comparatively rare. When accidents do occur, however, vehicles may be out of service for months for lack of needed spare parts.

It is believed that PWD employees will be receptive to training opprotunities, particularly if these are tied to the possiblity of promotion. Past experience with PWD training programs has showed relatively few dropouts. The proposed programs have been planned to take place during working hours to the extent feasible; where this is not the case, attendance should be voluntary.

Most formal training will probably take place in Banjul. Therefore, care should be taken to insure that the regional workshop staff is given equal opportunity to participate in these programs. Funds are provided in the training program budget to allow per diem for participants. It will not be necessary to provide food or housing directly as all PWD employees probably have some family connection in Banjul.

4. Participation of beneficiaries in project planning. There will be relatively little opportunity for the direct beneficiaries of this project to participate in its planning. This Project Paper has been prepared in collaboration with PWD senior officials and advisors. The Training Officer should participate actively in all phases of the training program; for this reason, it is essential that PWD nominate a candidate for this position before the Equipment Management System design team arrives. This means that the post should be established and included in the 1979/80 PWD budget.

Regional workshop superintendents should be consulted in decisions regarding the shipment of reconditioned Central Workshop equipment to the divisions. It would be wise to involve regional personnel also in planning and policy making with respect to spare parts procurement and distribution, as well as management decisions concerning respective responsibilities of different shops. Foremen from the road maintenance crews should also be involved in working out priorities and procedures for equipment maintenance and repair.

Given proper guidance, shop foremen and supervisors can participate in the identification of skill needs and the design of effective training programs. The seminars for instructor training should be planned to include opportunities for feedback from the shop floor on the usefulness and appropriateness of different types of training. It would also be desirable to incorporate some form of student feedback in the planning of informal and formal training courses.

Indirect beneficiaries will have little opportunity to participate in project planning. The IBRD program is geared to technical and economic rather than social and political criteria for selection of the roads to be maintained and of the maintenance techniques to be used. Workshop priorities for plant and vehicle maintenance and repair activities should be influenced primarily by technical considerations and only secondarily by social factors. There is no easy way to ensure that priority is given to government vehicles providing services in rural areas. Perhaps the best way to orient the project in this direction would be to maximize the facilities provided in the regional workshops, where vehicles engaged in rural service delivery are most likely to come for repair.

5. Potential opposition. The project will certainly strengthen the PWD and lend credence to its claim to manage and maintain all government vehicles. Conceivably this could be opposed by groups interested in taking this responsibility away from the PWD. However, as a practical matter it would be highly infeasible for each ministry to have its own motor pool and workshop. Local contractors are overloaded with private vehicle maintenance work and are not in a position to compete with PWD for government business. Therefore, the project is not expected to generate significant opposition in the public or private sectors.

Some opposition to improvement in the equipment management system is likely to come from the Accounting and Stores divisions of the MWC, as they stand to lose power and pretige in the process. Firm leadership and support from the top at the MWC will be necessary to effect meaningful change in these areas. There will be further resistance to any efforts to change present government procurement channels; here, the cooperation of the Ministry of Finance will be essential to achieve resuls.

The proposed workshop site is located in an unoccupied part of an industrial area and should not be opposed by community residents. The PWD training program is to be worked out in collaboration with VTC and Technical Institute staff and the President's Office, obviating any potential resistance from these sources. Finally, the project is supportive of many other donor activities, nearly all of which involve vehicles, and should be welcomed by all who have experienced frustrating delays because of poor PWD workshop performance in the past.

6. Communications strategies. Oral instruction in the English language with visual aids should present no problem for the present PWD staff. On the job training is desirable because it yields practical, productive results and gives tangible meaning to theoretical statements. However, classroom instruction can be used for younger staff members as a means of conveying basic concepts, terminology, and techniques.

It would be wise to conceive the technical assistance and training program as an effort to improve the productivity of the entire PWD staff. In general, a productivity increase should be obtained without having to upgrade large number of personnel. However, individuals demonstrating exceptional talent and dedication should be rewarded through promotion. This approach should relieve the middle management crunch without having to expand the total PWD staff.

Spread Effects

It is difficult to assess the potential "spread effect" of a project such as this. In a country as small as The Gambia, there is a limited need for the specialized services provided by a large plant and vehicle workshop. The project has been designed to meet national needs and it would be counterproductive to have it imitated elsewhere in the country.

There will be significant "spread effects" derived from the training program if it is developed, as proposed, in close collaboration with the National Vocational Training Program and the staff of the Technical Institute. The PWD job analysis exercise and determination of the skill requirement for different

grades in several skilled occupations could serve as a model for other government departments and private sector employers who will be asked to engage in a similar program. By actively participating on the National Vocational Training Board and the Trades Committees,the PWD will be able to influence national standards and to control much of the curriculum offered in the Technical Institute. Eventually, the PWD may be in a position to set up the nation's first formal apprenticeship program.

An even more significant "spread effect" could come about as a result of the proposed equipment maintenance management study. The record keeping systems and cost accounting methods which will be introduced in the PWD would, by analogy, have widespread value for other government departments and private sector enterprises. This spread effect can be achieved by having the Equipment Management Specialist, the Accountant (to be provided by IBRD), and the PWD Training Officer work together with the staff of the proposed Management Development Institute to see where their efforts may be applicable on a wider scale.

Incidence of Benefits

Economic benefits will flow from the proposed project in the following ways:

- increased workshop productivity resulting in reduced vehicle and plant down time

- increased efficiency of workshop operations resulting in more effective use of human resources

- improved road maintenance resulting in user cost savings

- increased road use resulting in decreased transport costs to producers and consumers and more efficient service delivery in rural areas

The economic benefits directly due to increased workshop productivity will accrue to the PWD budget, where they will offset any increase in recurrent costs that may be generated by the project. More hours of operation for each vehicle and piece of equipment means that the PWD budget will be able to cover more of the costs of road maintenance, so that the PWD by its own efforts should be able to decrease the backlog of periodic maintenance over time.

Economic benefits derived from more efficient use of human resources are also reflected in the PWD budget. Although the PWD cannot be expected to lay off additional redundant personnel

(the PWD work force has been cut from over 5,000 to about 3,000 in the last five years), it should be able to maintain a slower rate of growth in hiring than would otherwise be the case. Training and skill certification will permit many of the present staff to function for the first time at a level corresponding to their Civil Service grade, while others with exceptional ability should be able to move up into presently budgeted but unfilled middle management positions.

The principal economic justification for this project, however, comes from its crucial role in relation to the IBRD-funded road maintenance project. The IBRD has not analyzed the details of the incidence of expected benefits (user cost savings) by social groups. An effort to do so is presented below. The magnitude of expected benefits calculated here is only indicative and not at all precise; what is important is the share which goes to different groups. If benefits are allocated in proportion to total investment, then approximately 40% of the user cost savings are attributable to the AID portion of the project.

User cost savings were calculated for the major links involved in the IBRD program on the basis of user costs given in the National Transport Study (10) for four major vehicle types, and data on traffic levels and composition by link (also from NTS), using IBRD assumptions regarding user cost savings. The calculation of cost savings per vehicle-kilometer is shown in Table 9-2. For backlog maintenance on gravel roads, it is assumed that cost savings are doubled.

Traffic composition on those links for which data are available is shown in Table 9-3. Where data are not available, the following assumptions have been used:

- composition of traffic in the Banjul area is assumed to be the same as for Banjul-Brikama
- Essau-Farafenni is assumed same as Soma-Basse
- Selety-Mandinaba is assumed same as Barra-Karang
- Laminkoto-Basse is assumed to be the same as Farafenni-Laminkoto

No traffic count is available for Laminkoto-Basse. A traffic level of 50 vehicles per day is assumed for this link.

User cost savings by link for present traffic levels are shown in Table 9-4. The annual savings from routine maintenance without traffic growth amount to Ds. 12,670,405 or about U.S. $6,335,200, of which about 40% or U.S. $2,534,100 can be attributed to the AID investment. Backlog maintenance of gravel roads will add cost savings of Ds. 2,595,559 annually or about U.S. $1,297,800, of which about $519,100 is attributable to the AID part of the project.

About one-fourth of the total user cost savings will be generated in the Banjul area, and slightly less than half on paved roads. Benefits to non-Gambian traffic amount to only 3% of total benefits (Table 9-5). Heavy vehicles (buses and trucks) receive over half of the benefits; such vehicles account for 92% of the benefits on the Trans-Gambia highway, 73% on the less-travelled links from Farafenni to Basse on the north bank of the Gambia River, and only 26% of the benefits in the Banjul area (Table 9-6).

Thus, the majority of savings will be incurred in rural areas by vehicles engaged in passenger and goods transport. These savings, plus the intangible benefits of increased comfort and convenience in travel, will encourage increased use of the road network and the future growth of traffic on feeder roads. It is expected that the private sector will remain active in rural passenger and goods transport and will remain competitive in structure. Thus, user cost savings will be passed on to producers and consumers through reduced rates of growth in transport tariffs. These savings may not be very visible if they are offset by other factors (sharp rises in the cost of fuel, for instance), but they represent a real saving to the economy and a real inducement for future economic growth in rural areas.

TABLE 9-1

Gambia Motor Vehicle Fleet, 1976

	Registration				
	Police[1]	PWD[2]	MANR	Diplomat[3]	Total
Motorcycles	1263	40	-	-	1303
Personal cars	1689	203	78	250	2220
Small taxis	194	-	-	-	194
Large taxis	695	-	-	-	695
Buses	59	18	2	-	79
Trucks	971	107	14	-	1092
TOTAL	4871	368	94	250	5583

(1) Includes private and parastatal owners.

(2) All government vehicles except Ministry of Agriculture (MANR) and Police.

(3) Includes vehicles belonging to donor-sponsored rural development programs.

Source: Table 6-1, page 6-2
National Transport Study (10)

TABLE 9-2

User Costs By Vehicle Type

(Dalasis per Veh-Km)

	Paved	Gravel
Passenger vehicle	0.32	0.34
Van (light truck)	0.48	0.58
Bus	0.74	0.81
Heavy truck	1.29	1.42

Source: Tables B-48 and B-49, pp. B-63 and B-64, NTS (Volume II)

User Cost Savings By Vehicle Type

(Dalasis per Veh-Km)

	Paved	Gravel
Passenger vehicle	.032	.051
Van	.096	.174
Bus	.100	.365
Truck	.387	.639

Source: Calculated according to the following rule: "Routine maintenance will reduce vehicle operating costs per pcu (passenger car unit) by 10% - 15% on paved and gravel roads." (IBRD)

Passenger vehicles (1 p.c.u.) include motorcycles, cars and taxis. Light truck (van) (2 p.c.u.s) includes Land Rovers etc. Buses and trucks are assigned 3 p.c.u.s.

It is assumed that costs on paved roads are reduced by 10% and costs on gravel roads are reduced by 15%. Backlog maintenance on gravel roads doubles the user cost savings.

TABLE 9-3

Traffic Composition on Selected Links

Link	ADT	Composition (%) Cars (1)	Vans	Bus	Truck
1. Banjul area	8,000	81	11	6	2
2. Banjul-Brikama	1,000	81	11	6	2
3. Brikama-Soma	500	73	13	3	11
4. Soma-Basse	200	53	29	3	15
5. Essau -Farafenni	200	53	29	3	15
6. Farafenni-Laminkoto	100	59	16	0	25
7. Laminkoto-Basse	50	59	16	0	25
8. Barra-Karang	500	84	6	1	9
9. Selety-Mandinaba	100	84	6	1	9
10. Trans-Gambia	350	35	2	32	31

(1) Includes motorcycles, cars and taxis.

Source: Table 6-5, page 6-11, NTS (10)

TABLE 9 -4

CALCULATION OF USER COST SAVINGS BY LINK
(Dalasis)

		Length	Type	ADT	Composition/Cost 1	2	3	4	Total Benefits
1.	Banjul area	25	Paved	8,000	81 .032	11 .096	6 .100	2 .387	1,004,400
2.	Banjul-Brikama	34	Paved	1,000	81 .032	11 .096	6 .100	2 .387	170,750
3.	Brikama-Soma	146	Paved	500	73 .032	13 .096	3 .100	11 .387	594,293
4.	Soma-Basse (15 km. B)	195	Gravel	200	53 .051	29 .174	3 .365	15 .639	774,073
5.	Essau-Farafenni (B)	110	Gravel	200	53 .051	29 .174	3 .365	15 .639	810,876
6.	Farafenni-Laminkoto (B)	115	Gravel	100	59 .051	16 .174	0 .365	25 .639	500,664
7.	Laminkoto-Basse	97	Gravel	50	59 .051	16 .174	0 .365	25 .639	105,575
8.	Barra-Karang	20	Paved	500	84 .032	6 .096	1 .100	9 .387	68,470
9.	Selety-Mandinaba	13	Gravel	100	84 .051	6 .174	1 .365	9 .639	8,901
10.	Trans Gambia	25	Paved	350	35 .032	2 .096	32 .100	31 .387	144,454

Total Daily Benefits x 100 4,182,456

(B) Backlog maintenance

TABLE 9 -5

BENEFITS TO NON GAMBIAN TRAFFIC

	Benefits
25% of Link 8	17,118
12% of Link 9	1,157
75% of Link 10	108,341

$$\frac{126,616}{4,182,456} = 3\%$$

TABLE 9 -6

BENEFITS TO HEAVY VEHICLES

	Benefits	% of Link
Link 1	274,800	27%
Link 2	46,716	27%
Link 3	332,661	56%
Link 4	448,592	58%
Link 5	469,920	58%
Link 6	367,425	73%
Link 7	77,479	73%
Link 8	35,830	53%
Link 9	4,658	52%
Link 10	132,974	92%
TOTAL	2,191,055	55%

ANNEX 10

Training Program Details

The training program proposed for this project has five basic elements:

1. On-the-job training for all workshop staff, from apprentices and mechanic's mates all the way up to senior management personnel functioning as counterparts to the proposed Technical Assistance experts. This kind of training is basically informal, takes place in the work setting, and relies on superior's evaluation of subordinates' performance rather than on standardized testing procedures to determine its effectiveness in transferring technical or management skills. It is highly flexible, oriented to the practical needs of production, and costs very little to implement. It is particularly cost-effective in situations where only a small number of individuals need to be trained to fill additional jobs where a number of qualified staff are already available. On-the-job training has been used almost exclusively by the Public Works Department in the past.

2. Regularly scheduled demonstrations of equipment maintenance or repair activities provide a somewhat more formal method of training which utilizes the skills of existing workshop personnel, as well as those of the Technical Assistance experts. These demonstrations can often be coordinated with the performance of needed production activities. Nevertheless, in order to insure that they are not superceded by the demands of production, it would be desirable to fix a specific time (during work hours) and to allocate a specific budget to this activity.

Although a number of individuals will actually participate in leading the proposed demonstrations, the cost has been estimated on the basis of 10% of a workshop superintendent's salary in 1978/79 (Ds. 6535). This corresponds to an allocation of approximately one half day per week for demonstrations. A margin is allowed to cover incidental costs such as travel. These demonstrations should be held regularly, perhaps once a month, in the regional workshop in Mansa Konko or in other PWD regional shops as the opportunity arises. The total cost for one year is estimated not to exceed U.S. $500 (approximately Ds. 1000).

3. The new road maintenance equipment to be provided by IBRD and the new workshop equipment to be provided by AID will require a certain amount of operator training which can be readily provided by manufacturers' representatives. It is expected that short courses (a week or so in length) can be arranged for 15 to 20 skilled workers at a time. These courses would be given in Banjul and could take place at night. Training participation should be specified in the contracts under which AID-purchased workshop equipment is procured.

The manufacturers can be expected to pay the instructor's salary, leaving the travel costs to be absorbed by the training program. It will also be necessary to provide local per diem for staff members not based in Banjul to attend the workshops. Annual costs for this component are estimated on the basis of four one-week courses offered twice yearly for two years.

8 round trips US-Banjul	@ $1600	= $ 12,800
56 days per diem	@ $60	= 3,400
20 trainees x 5 days x 8 courses = 800 days of trainees per diem	@ Ds 10	= 4,000

The total annual cost for this component is estimated at $20,200, of which $4,000 or about 25% is a local currency cost. Funds are provided for this component to be continued for two years.

A classroom will be provided with the new Central Workshop. The AID program will provide a slide projector, film, overhead projector and screen, tables and chairs for 20 persons, and 6 sets of general automotive tools to be used for training purposes. (See table 10-1). This equipment will cost $11,600. Funds are provided for the purchase of these items in FY 80.

If short courses are planned to take place before workshop construction is completed, it will be necessary to find another locale. The Vocational Training Center is conveniently located near the PWD's present site, but is poorly designed and equipped to accommodate such courses at the present time. New equipment has been ordered and the building will be partially rehabilitated during the next six months, so it may provide an appropriate facility for night c'asses in the future.

4. There appears to be a general need for more formal training to bridge the gap between the current preparation of junior secondary school leavers and the basic technical or clerical knowledge normally expected of an entry level employee. The existing Vocational Training Center has been unable to fill this gap, resulting in a loss of confidence among the PWD and other employers regarding the skills of VTC graduates. However, there is a major program currently underway to upgrade the VTC to a Technical Institute and to relate its curriculum more closely to national needs. The PWD, as a major employer, will participate in determining the content of the instructional program and the standards for skill certification in relevant occupations. Thus, it is expected that in the long run the PWD will be able to count on the Technical Institute to provide basic instruction in the fields of auto mechanics, auto electrics, welding, fitting, and office skills.

TABLE 10-1

Training Equipment

Description	Quantity	Unit Price	Total Price
Projector, slide	1	$150	$ 150
Projector, overhead	1	450	450
Screen, movie	1	60	60
Table, classroom	4	100	400
Chairs, classroom	20	45	900
Tools, general purpose sets	6	900	5,940
			$ 7,900
CIF Banjul and Purchase Agents Fee (47%)		Total cost	$11,600

In the short run (1980-82), needs for more basic theoretical training might be met through a program of courses jointly sponsored by the PWD and the VTC, and jointly planned by the proposed PWD Training Officer (see below) and the technical assistance experts in vocational training provided to the President's Office by the International Labour Organization (ILO). An appropriate locale for such courses would need to be found; a re-equipped and rehabilitated VTC building might be used. It is envisaged that these courses would take place at night; thus, adequate lighting is essential.

It would also be necessary to find qualified instructors. The instructors should be Gambians with at least a City and Guilds certificate (Part I) and a Teacher Training Course certificate. In addition, they should be judged competent to teach basic skills by both the PWD Training Officer and his counterpart at the VTC. Recruitment for the expanded staff of the proposed Technical Institute has shown that there are relatively few Gambians available with the required qualifications, even for well-paid positions. If necessary, it is possible that technical assistance personnel or private volunteers could be called on to fill the gap. Planning the courses to take place at night would increase the probability of finding a qualified Gambian able and willing to take on the job of instructor.

It is suggested that four courses be offered each year, a two-course sequence in mechanics and a two-course sequence in accounting. Classes would meet twice weekly for 15 weeks. The maximum class size would be 20 students; this should be more than adequate to meet PWD training needs and places could be made available to other Ministry of Works personnel, other ministries, or to the general public. Performance objectives should be established for each course, and successful students should receive certificates corresponding to the grade attained in accordance with the proposed system of national standards. Students would pay no fees and receive no allowances, but books and other needed supplies would be provided.

The annual cost of such a program is estimated as follows:

Instructor salaries:	Ds. 25 per session x 30 sessions = Ds. 750 per course (Ds. 1,500 for a two-course sequence)
	4 x Ds. 750 = Ds. 3,000 = U.S. $1,500
Books and supplies:	Ds. 50 per student x 80 students = Ds. 4,000 = U.S. $2,000
Total cost:	$3,500 per year

The above example is illustrative and meant to be used for cost estimating purposes only. The actual needs for classroom training and the curriculum to be offered should be determined on the basis of skill testing and job analysis to be carried out within the PWD with the participation of the Training Specialist. Provision is made for such courses to be offered in FY 80 and FY 81 before the opening of the new Technical Institute.

5. Finally, the PWD training program will be institutionalized through training of Gambian instructors and administrative arrangements to insure continuity after the AID project is completed. It is proposed that the GOTG create a temporary position of Training Officer in the PWD headquarters staff to coordinate all PWD training activities. The person holding this position would identify training needs as a function of manpower requirements and manpower availability, would develop and implement programs to meet these needs, would plan to make the most effective use of technical assistance resources in the training program, and would provide liaison between the PWD and the national manpower planning and vocational training programs. It is anticipated that a full-time Training Officer will be required for at least three years, after which the duties of the position could be rotated among the senior staff of the PWD.*

The salary corresponding to this position is estimated at the Civil Service Grade 15 level of Ds. 8,400 or U.S. $4,200. The total cost for three years would be U.S. $12,600. The proposed project would cover the cost of a Training Officer for three years, after which PWD should assume responsibility for recurrent costs associated with this position.

In addition, there should be a short course organized approximately every six months for workshop supervisors, foremen, and other personnel involved in giving demonstrations or in similar training functions. This course would focus on training methods and techniques, developing communication skills and creativity in the construction and use of visual aids. It should also provide a forum for feedback from the workshop senior staff about the utility of or the need for different types of specific skill training. The services of an ILO expert resident in The Gambia could probably be secured at no cost to participate in a two-day seminar for ten persons twice a year, planned and conducted by the PWD Training Officer.

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*There is presently a Training Officer position in the Buildings division of the Public Works Department. This post was created for administrative reasons and the occupant, who functions as a building superintendent, has no training responsibilities. The post is at Civil Service Grade 12, which is too low for the responsibilities which a Training Officer would be expected to assume under the present project. It is suggested that this position be re-named in a way which reflects its actual functions, and that a new Training Officer post be created at Grade 15 to serve all parts of the PWD organization.

The total cost of this program is estimated at the cost of salaries and per diem for the participants at Ds. 50 per day.

DS. 50 x 10 x 2 x 2 = Ds. 2,000 = U.S. $1,000

Annual costs for each component of the proposed training program and total annual costs (in 1979 dollars) are shown in Table 10-2. These costs exclude the value of the local government contribution (space, utilities, etc.), which is estimated at approximately $2,500 per year (in 1979 dollars). Also, the cost of the short-term Training Specialist to be provided as part of the Equipment Maintenance Management Study team is not included in the estimated cost of the training program.

Methodology

The training program envisaged for this project was designed on the basis of the following elements:

- establishment of basic assumptions concerning PWD responsibilities and activities during the project period
- preliminary analysis of PWD manpower requirements for the project design year (1985)
- determination of the capacity of existing PWD personnel to fill these needs
- determination of the additional staff required in different categories
- determination of the types of skill training required to upgrade existing staff and train new personnel for specific jobs
- investigation of the capacity of the existing Vocational Training Center (VTC) and the planned new Technical Institute and Management Development Institute to provide the required training
- investigation of the capacity and willingness of the PWD to provide training resources
- investigation of the training resources available through the activities of other donors

Table 10-2

Summary of Training Costs
(1979 U.S. dollars)

Component	FY 80	FY 81	FY 82	FY 83	Total
1. On-the-job training	-	-	-	-	-
2. Weekly demonstrations	500	500	500	500	2,000
3. Short courses on new equipment	-	20,200	20,200	-	40,400
4. Formal training	3,500	3,500	-	-	7,000
5. Seminar in training methods	1,000	1,000	1,000	1,000	4,000
6. Training Officer	4,200	4,200	4,200	-	12,600
7. Training equipment	11,600	-	-	-	11,600
TOTAL	20,800	29,400	25,900	1,500	77,600

Assumptions

The proposed training program is based on the following assumptions:

1. PWD road maintenance responsibilities in design year 1985 will consist of routine and periodic maintenance on the entire road network presently under PWD responsibility, as well as the roads currently being improved to all-weather standard under the UNSO feeder roads program and other bilateral aid programs. It will not include the approximately 1,700 km. of unimporved roads and tracks, whose maintenance is currently the responsibility of the Ministry of Local Government and Lands.

2. The Soma-Basse road, part of the network presently under PWD responsibility, will be paved by 1985. Kuwaiti financing has been secured for the first phase of this project. It is further assumed that the proposed bridge/barrage project for the Gambia River crossing on the Trans-Gambia Highway will not be completed by 1985.

3. The Public Works Department will continue to have responsibility for maintaining the entire Government vehicle fleet of 659 vehicles, not including vehicles belonging to the Ministry of Agriculture and Natural Resources, the Police, and parastatal enterprises such as the Gambia Produce Marketing Board of the Gambia-Libya Public Transport Corporation.

4. The Public Works Department will cooperate fully with the President's Office in helping to set up and implement a national vocational training and skill certification program.

5. The Public Works Department will designate the required personnel to assume responsibility for the training program, will effectively encourage these persons to devote the required amount of time to training activities, and will incorporate provisions for ongoing training in its planning, programming and budgeting for the period following the termination of this project.

Manpower Requirements and Resources

A preliminary analysis of the personnel requirements for routine and periodic road maintenance in 1982 was made in the CILSS-sponsored Diagnostic Study of Road Maintenance for the Gambia (1) (hereafter referred to as the LBI Report). These estimates were based on the following assumptions about the size of the road network under PWD responsibility:

1. Paved roads would increase from about 300 km. to about 750 km. through paving of the Soma-Basse, Essau-Kerewan, and Kerewan-Farafenni-Laminkoto links.

2. The total length of gravelled roads (540 km.) would be essentially unchanged, as the kilometrage of feeder roads to be improved corresponds fairly closely to the total length of presently gravelled links scheduled for paving.

3. The feeder road network (not a PWD responsibility) would be reduced from about 2150 km. to about 1700 km. in length.

These assumptions now appear fairly optimistic, even for design year 1985. The first stage of the paving of the Soma-Basse road is just getting underway. The Gambia Road Maintenance Study(9) (RPT Report) assumes that paving of the Essau-Kerewan link will take place during the next Five-Year Plan period (1980/81 to 1984/85) and that the UNSO feeder road program will be completed by 1985. It also assumes paving of the short unpaved section of the Dakar-Banjul-Bissau road (the Mandinaba-Selety link) during the next plan period. The changes assumed for design year 1982/83 in the RPT Report can be summarized as follows:

Paved roads: 530 km.
Gravel roads: 750 km.
Unimproved roads under PWD responsibility: 40 km.
Total PWD responsibility: 1320 km.

The principal difference between the road network forecast for 1982 in the LBI Report and in the RPT Report is the paving of the Kerewan-Farafenni and Farafenni-Laminkoto (Georgetown) links. Current traffic levels on these links, as determined in the National Transport Study (NTS), range from 100 to 200 vehicles per day. It appears unlikely that paving of these links will be economically justified before 1985. The IBRD maintenance program includes backlog maintenance on these links.

The LBI Report estimated manpower needs for road maintenance in 1982, based on its assumptions about changes in the road network. The manpower needs were derived from a detailed analysis of tasks required for the execution of routine and periodic maintenance on the network under PWD responsibility. It was assumed that the technology of PWD road maintenance on this network would not differ substantially from present practices, which are labor-intensive to the extent possible consistent with normal engineering standards of performance.

The projected manpower requirements were then compared to the existing PWD personnel assigned to road maintenance in 1976. The comparison revealed a need for additional personnel in the following categories:

Supervisory:	1	Division Engineer
	2	Deputy Divisional Engineers
	4	Accountants
	2	Buyers
	1	Training Specialist
Equipment Maintenance:	2	Equipment Controllers
	3	Crew Members
	21	Mechanics
	22	Assistant Mechanics (Mechanic's Mates)
	2	Electricians
	1	Fuel Injection Specialist
	4	Machine Tool Specialists
	2	Other Personnel
Production:	27	Road Foremen
	5	Equipment Operators
	5	Field Mechanics
	1	Assistant Field Mechanic
	1	Field Lubricator
	29	Drivers

This analysis did not, however, take into account the total staffing of the PWD at that time. In 1976/77 the Transport Branch included 185 drivers, 95 operators, and 196 skilled workers (among other categories of personnel). This indicates that there were on the PWD payroll in 1976 well over 100 drivers, about 50 operators, and over 50 skilled workers whose responsibilities were not directly related to road maintenance.

Personnel requirements for vehicle maintenance were forecast for this study on the basis of the anticipated size of the PWD vehicle fleet in 1985. (See Table 10-3) An increase of approximately 80% in the PWD vehicle fleet is expected over this period. On the assumption that the productivity of present workshop personnel will be doubled by 1985 under the present project, including the provision of a new workshop, tools and equipment, technical assistance and training, it is concluded that no additional personnel will be required for vehicle maintenance, and that some of the present workshop personnel can be shifted over to meet the growing equipment maintenance responsibilities.

With regard to supervisory personnel, the relevant staff for this project include the Chief Mechanical Engineer and his assistant,

TABLE 10-3

Past and Projected Growth of the
PWD Vehicle Fleet

Years	Existing Fleet	New Vehicles	Out of Service	Net Fleet
1972 (1)	83	26		109
1973 (1)	109	35		144
1974 (1)	144	51		195
1975 (1)	195	84		279
1976 (1)	279	89		368
1977 (2)	368	129	(83)	414
1978 (3)	414	145	(26)	533
1979 (3)	533	88	(35)	586
1980 (3)	586	113	(51)	648
1981 (3)	648	151	(84)	715
1982 (3)	715	171	(89)	797
1983 (4)	797	174	(129)	842
1984 (4)	842	199	(145)	904
1985 (4)	904	152	(88)	968

(1) Estimated from combined figures given for PWD and MANR in Table 6-2, page 6-5 of the National Transport Study, assuming the same proportion as the PWD/MANR split in 1977.

(2) Actual figures for 1977, given in Table 6-1, page 6-2 of the National Transport Study. It is assumed that all vehicles acquired before 1972 went out of service in 1977.

(3) 1978-1982 annual increase estimated at 10%

(4) 1982-1985 annual increase estimated at 5%.

An average vehicle life of 5 years is assumed.

the Senior Mechanical Engineer, in the Central Workshop. At present, the Senior Mechanical Engineer position is filled by an expatriate. Two posts below this position have been created, but are vacant at the present time: Mechanical Engineer (Vehicles) and Mechanical Engineer (Plant). There are 7 Mechanical Superintendents, 5 Assistant Mechanical Superintendents and a Motor Transport Superintendent who assume day-to-day supervisory responsibilities in the Central and Regional Workshops. These positions do not require an engineering degree.

The shortage of qualified engineers is more critical as regards the road maintenance program. At present, the post of Chief Executive Engineer is vacant, as are all but one of the Divisional Executive Engineer positions, and that one is filled by an expatriate. However, the posts of Divisional Engineer and Engineering Assistant are filled by Gambians in most cases (one Division lacks an Engineering Assistant). The Headquarters position of Executive Engineer (Design) is presently filled by an expatriate.

In recent years, the PWD has been able to recruit, on the average, two engineers per year from among returning Gambian students. While not all those whose studies are sponsored by PWD return to this department, on the other hand, PWD has received inquiries about employment from students educated abroad under private auspices. The government list of Gambian engineering students abroad indicates a high probability that PWD will be able to sustain this rate of recruitment in the future until all positions requiring an engineering degree are filled. It is expected that this will be accomplished by 1982.

Additional needs for accountants and buyers do not concern the PWD directly, but rather the Accounts and Stores departments of the MWC. It is expected that these divisions will commit the necessary personnel to make the proposed road maintenance program effective. The AID project may offer some assistance in the areas of basic accounting and supply system management, through formal courses in the training program and through on-the-job training activities.

With regard to equipment and vehicle maintenance requirements (workshop personnel), total needs were forecast by the design team as a function of the expected plant and vehicle fleet and the level of responsibilities to be assumed by the central and regional workshops. This analysis is shown in Table 11-3 (Annex 11). It reveals that the present Central Workshop staff of skilled personnel is sufficient to meet anticipated needs. Approximately 15 new middle level posts will be required in the divisional workshops. The present PWD recruitment and training procedures will be sufficient

to staff these positions in the next year and to meet any future shortfalls caused by attrition.

As for road maintenance production personnel, the GOTG has instituted a program to recruit secondary school leavers to the position of trainee foreman. Nine such positions have been created; at this rate, anticipated needs for the road maintenance program will be met within three years. This expansion clearly shows the GOTG commitment to meeting the personnel requirements to support the expanded road maintenance program envisaged for 1985.

In summary, if present trends continue, there will be an adequate number of staff on the PWD payroll in 1985. There appears to be little difficulty in finding applicants for available PWD positions that do not require an engineering degree.

The PWD recruits staff at three levels. Entry to the senior management staff requires an engineering degree. As indicated above, programs are underway to improve the supply of Gambian engineers through scholarships for training abroad. The IBRD road maintenance also includes a scholarship for a mechanical engineer, presumably destined to occupy the currently vacant position of Mechanical Engineer (Plant). Although there are alternate opportunities for employment of engineers elsewhere in Government, there are practically no such opportunities in the private sector, given the small scale and slow growth of the Gambian economy.

Potential foremen or skilled workers are recruited from among VTC graduates and junior secondary school leavers. Thus, they have basic literacy and numeracy skills, although they may lack basic technical skills at entry. Older foremen and skilled workers who have risen through departmental experience alone may have some difficulty with written English, but can be expected to understand oral presentations in English on technical matters. These people can provide a valuable communications resource with appropriate training.

Unskilled workers are recruited locally (mostly in the Divisions) and may be either temporary or permanent employees. No educational qualification is required. Some workers in this category may eventually become skilled workers through departmental experience. At present there is no skill testing or certification program that would permit an objective evaluation of the qualifications of a skilled worker or a formal determination of the number of middle-level positions filled by qualified personnel.

Present PWD positions are summarized in Table 10-4. Details of the Mechanical Engineering section are given in Table 10-5.

TABLE 10-4

Summary of PWD Positions, 1978/79

Headquarters	Top Level[1]	Middle Level[2]	Lower Level[3]	Total
Directorate	3	11	4	18
Civil Engineer	4	8	1	13
Architecture	6	10	1	17
Contracts	2	3	1	6
Carpentry	1	31	-	32
Mechanical Engineering*	11	608	69	688
Security	-	50	-	50
TOTAL	27	721	76	824
Divisions**				
Northern	4	82	1	87
Western	4	82	1	87
Eastern	4	78	4	86
TOTAL	12	242	6	260
PWD Total	39	963	82	1,084

1 Grade 13 and above
2 Grades 4 - 12
3 Grades 1-3

* Includes the central and regional workshop staff and the PWD vehicle pool. See detail in Table 10-5.

** Excludes daily paid personnel (unskilled workers employed in road maintenance)

TABLE 10-5

Mechanical Engineering Section 1978/79

Supervisory Staff	
Chief Mechanical Engineer	1
Senior Mechanical Engineer	2
Mechanical Superintendents (Workshop Supervisors)	7
Assistant Mechanical Superintendents	5
Motor Transport Superintendent	1
Middle Level Staff	
Shop foremen and assistants	10
Drivers	252
Operators	120
Tradesmen	178
Lower Level Staff	
Apprentices	12
Mechanics Mates	55
Clerical Staff (middle level)	
Senior Accounts Officer	1
Accounts Clerk	5
Clerks	8
Messengers (lower level)	2

Training Requirements and Resources

The major training needs currently anticipated for the PWD program in 1985 include:

1. General mechanical training
2. General clerical/accounting training
3. Training on specific items of workshop equipment
4. Training on specific items of road maintenance equipment
5. Training in equipment management methods
6. Training in training methods and techniques

General driver training for the operation of light vehicles is assumed to be obtained by drivers prior to applying for a PWD position, and is certified by the possession of a Gambia driver's license. It is conceivable that drivers could benefit from a light course in elementary auto mechanics that would enable them to identify potential problems and to carry out basic routine maintenance operations on their vehicles.

General mechanical training and general clerical/accounting training have in principle been provided in the past by the Gambia's Vocational Training Center (VTC). The PWD is one of the major employers, possibly the most important single employer of VTC graduates. However, the VTC, established in 1962 with U.N. financing, is overcrowded, understaffed, and offers very poor conditions for vocational training at the present time. As a result, the PWD is reluctant to rely on the VTC as a source of skilled personnel.

PWD provides informal on-the-job training to its employees by assigning new recruits (mates) to work with more senior staff. The mates work as helpers in a five-year period, then are promoted to Journeymen positions. Specific learning objectives are not established, and there is no formal procedure for skill certification. Employees are promoted to skilled positions on the basis of seniority and recommendations from their superiors, who make an informal assessment of their progress.

There is a PWD apprenticeship program (in which some VTC students have participated), but its success is determined by subjective evaluations rather than by a standard set of performance measurements. As a result, it is difficult to determine exactly what skills are possessed by employees in a particular job category.

This is not a problem from the standpoint of the road maintenance program or other PWD activities, since it appears that the existing personnel are, in fact, performing their jobs reasonably

well. The PWD has tried to maintain a policy of filling available positions only with qualified personnel, even when this meant leaving positions vacant or relying upon expatriate assistance to fill the gap. The lack of detailed job descriptions and standards of performance is a problem only for the design of an appropriate training program, and one that can be relatively easily overcome with PWD participation.

Record keeping has always been a problem in the PWD, where more immediate operational responsibilities have often taken precedence over paperwork. Records are kept, but they have generally not provided ready access to the data needed for management and planning purposes. Some clerical, bookkeeping and cost accounting courses will therefore be required for existing personnel under the present project. To date the PWD has made no arrangements to provide its staff with in-service training in these areas.

Training on specific items of workshop and plant equipment is currently accomplished through informal demonstration methods, which are probably adequate for the continued use of the existing equipment. A whole fleet of new road maintenance equipment will be provided under the IBRD project, and substantial amounts of new workshop equipment will be provided under the AID component. Specific training in the use and maintenance of this equipment can be most effectively provided by the manufacturers, who will have developed training methods and materials and who will probably be willing to pay the salaries of their employees sent out to conduct short training courses. The PWD should anticipate detaching the required number of equipment operators (plant and workshop) to attend such courses during two years of the project. A special effort should be made to ensure that Gambian senior staff (road foremen and workshop supervisors) are instructed in the use of the training materials, so that these short courses may be repeated as needed to train new operators without the need for further expatriate assistance.

The overall training needs of the PWD justify the nomination of a full-time Training Officer from among the PWD staff for a fixed period of three years. The initial responsibilities of this officer would include:

- preparation of job descriptions, including detailed skill requirements, for all PWD positions, in collaboration with the National Vocational Training Program under the President's Office (see below)

- preparation of a detailed manpower development plan for the PWD, based on its anticipated responsibilities in 1985 and 1990

- design and development of curriculum and materials needed to carry out the PWD training program

- planning, administrative arrangements, and coordination for short courses by manufacturers' representatives

- identification and evaluation of PWD candidates for theoretical training at the Technical Institute and Management Development Institute, as well as candidates for engineering scholarships

- training of workshop supervisors and road foremen in instructional methods and techniques

- possible development of a formal PWD apprenticeship program for mechanics, machine operators, and equipment operators, in collaboration with the In-Plant Training Program of the Technical Institute

The PWD Training Officer could be expected to represent the MWC on the National Vocational Training Board (soon to be reactivated under new legislation), or on one of the proposed Trades Committees which will be responsible for setting national standards for skilled occupations. The Training Officer should occupy a position similar to that of the present Contracts Officer, reporting directly to the Director of Public Works and serving all three branches of departmental activity. He would also act in a counterpart capacity with the proposed Technical Assistance team in relation to their training responsibilities.

Because the Training Officer should be selected from among the senior staff, it will be necessary to envisage a temporary replacement to carry out his normal duties. It is expected that after the first three years, the responsibilities of the Training Officer could be rotated among the senior staff at the level of Divisional Engineer or Deputy Divisional Engineer.

The Role of Technical Assistance

As part of the Equipment Maintenance Management Study component of this project, it is envisaged that a Training Specialist will spend approximately three months in the Gambia in FY 80. This person should work closely with the PWD Training Officer and the senior workshop staff to identify skill needs specifically related to the correct operation and maintenance of the workshop equipment and the road maintenance plant. To the extent feasible, this person could also address training needs for light vehicle operation and maintenance.

Further technical assistance and participation in training programs can be secured from the many experts who will be resident in the Gambia during the project period. It is assumed that the World Bank will provide the following technical assistance under the road maintenance program:

- A Team Leader/Highway Engineer for four years
- An Accounting Expert for two years
- A Road Foreman for two years
- A Master Mechanic for the Central Workshop for two years
- A Senior Mechanic for the mobile workshop for two years

It is expected that AID will complement this program by providing:

- An Equipment Management Specialist for three years
- A Master Mechanic for the Central Workshop for three years

Each expert is expected to provide on-the-job training to his counterparts and subordinates. However, given the other responsibilities assigned to these experts, it is expected that no more than 5% of the Team Leader's time and 10% of the remaining experts' time would be available for participation in formal training activities.

The ILO currently has three training experts in The Gambia, working with the President's Office to develop a National Vocational Training Program. They include a Vocational Training Expert/Team Leader, an In-Plant Training Specialist, and a Rural Vocational Training Specialist. Their activities are projected to continue until the opening of the new Technical Institute, sometime in 1981. One or more of these experts would be available to work with the PWD Training Officer in job analysis and in the planning and implementation of a training program.

The UNDP also has a Manpower Planning Advisor in the Ministry of Economic Planning and Industrial Development, who might be interested in this project. There will also be a Technical Education Advisor coming in 1980 as part of the team for the new Technical Institute. A specialist in Accounting and Financial Management will be provided as part of the Technical Assistance team for the proposed Management Development Institute, currently scheduled to spend three months in the Gambia in 1982.

International contractors involved in road upgrading projects also provide on-the-job training to PWD personnel seconded to them, as well as to the laborers they hire locally, who often come to PWD after they leave. A Canadian contractor is currently carrying out the UNSO feeder road program, and a French contractor is upgrading the Soma-Basse Road. Other scheduled road improvements during the project period include the Kiang West secondary roads

(KFW financed), and Buniadu-Sika-Kuntair on the north bank (FED financed). Each team will have expatriate senior staff with some on-the-job training responsibilities. Because their activities are relatively far from Banjul, however, it seems unlikely that they could be effectively integrated into a formal PWD training program.

Some of the senior staff positions in the PWD are presently filled by expatriates provided by the British Ministry of Overseas Development (ODM). It is uncertain whether these positions will continue to be filled by expatriates past 1980. In any case, they are line positions with major production responsibilities, and the incumbents cannot be expected to devote a significant amount of time to training activities. In contrast, the holders of two senior advisory posts in the Ministry of Works (also ODM advisors) can make important contributions to the design of a training program. This includes the Technical Advisor (ex-Director of Public Works) and the Transport Planning Advisor.

In summary, the Gambia will have a more than adequate supply of expatriate personnel with the needed technical and administrative skills for training during the project period. It will be up to the PWD Training Officer and his counterparts to plan to make effective use of this resource in the design and implementation of training programs. The overall purpose of the program should be to prepare a sufficient supply of qualified Gambians at all levels so as to obviate the need for continued technical assistance in the future.

The National Vocational Training Program

The training activities of the Public Works Department should be conceived as part of the national effort to adjust the supply of educated Gambians to the needs of the national economy. This effort has been formulated as a National Vocational Training Program placed directly under the President's Office, and is supported by the World Bank's first Education Sector Project in the Gambia.

Under this program, the National Vocational Training Board will be reactivated and given a positive role to play in the formation of national manpower policy. The Ministry of Works and Communications, as a major employer, will be represented on the Board. Trade Committees will be formed to review the standards proposed by the Directorate for different grades and occupations. Each employer will be asked to conduct a job analysis and to determine what specific skills are required for each position. Vocational education will then be designed to meet these needs in appropriate combinations through the use of a Module of Employable Skill (MES) system of training.

The institutional focus of this activity will be the new Technical Institute, located in Kanefing, which will replace the present Vocational Training Center. The Technical Institute will have a capacity of 260 students, more than enough to meet all of the Gambia's projected needs for skilled manpower. Initially, instruction will be confined to skill upgrading for existing workers, leading to an expanded in-plant training program. Skill testing and certification will also be carried out in the Technical Institute. The Institute was originally scheduled to open in late 1980; current estimates are that it will open sometime in 1981.

Some other aspects of the Bank's Education Sector project are relevant to PWD training needs. A Management Development Institute is scheduled to open approximately one year after the Technical Institute. It will offer courses for middle-level management in office procedures, personnel supervision, and business finance. The capacity of the Management Development Institute will be between 150 and 200 students annually. This Institute could take over responsibility for training PWD workshop and clerical staff in record keeping and cost accounting skills.

A second aspect of the project is the planned upgrading of junior secondary schools, by adding space and equipment for a fifth year devoted to technical training. The curriculum is being prepared by the Bank-financed Curriculum Development Center within the Ministry of Education. Five junior secondary schools will initially benefit from this program: two in the Banjul area, one at Brikama (proposed site of the relocated PWD Western Division shop), one at Pakali N'Ding (near the Eastern Division shop at MansaKonko), and one at Georgetown (near a PWD sub-depot). It is probable that graduates of these upgraded schools, with a technical training probably equivalent to that of recent VTC graduates, will seek employment with the PWD either at the regional headquarters or in Banjul.

An Instructor Training Center for rural vocational training is presently planned to be established between Mansa Konko and Jenoi. This facility could eventually serve to introduce PWD supervisory personnel to new training methods and techniques. It is expected, however, that this facility will not be operational before 1982.

In summary, if the development of a training program for the PWD is seen as a part of the overall national effort in the area of manpower planning and vocational training, presently programmed resources will become available to meet long-term needs. Only in the short term (for the duration of this project) should PWD have to make a special effort to organize its own activities and to take a leading role in the development of the nation's human resources.

ANNEX 11

Disposition of Present Workshop Tooling and New Equipment

The present total PWD workload of approximately 659 units of plant and transport vehicles (source: PWD inventory) requires personnel and tooling to accomplish 160 major overhauls a year plus the normal workload of providing scheduled preventive maintenance services and breakdown repairs of a magnitude of about 6,000 service checks and 3,000 interior repairs per year. This workload will increase by 70% in 1985.

The present PWD workshops were found to be inadequately and improperly equipped to handle these normal workloads. Therefore, very little maintenance was being accomplished in the field and the Central shop was completely bogged down from the congestion of deadlined equipment and that which was under repair.

In discussions with PWD officials it was found that planning was underway to upgrade the capability of the Mansakonko Workshop to accomplish overhaul work. Therefore, it was decided to equip this facility from the used equipment from the Central Workshop as much as possible and purchase the additional new equipment under the AID grant to complete the outfitting of the Mansakonko Workshop as well as to upgrade the capability of the Georgetown and Basse Workshops to accomplish third echelon repairs which includes all servicing, minor repairs, and some component replacement.

The workshop equipment is of British manufacture and is located in all areas. This equipment is in poor condition and insufficient in quantities for performing normal maintenance to the equipment fleet. Therefore it was decided, and agreed by Public Works officials that for the remainder of time in the old Central Workshop, the equipment would be utilized as much as possible and then the serviceable items of equipment would be repaired by PWD prior to their move to the new shop facility. This equipment, after repair, would be turned over to the District Workshop or retained in the new facility as designated in Table 11-1 (Disposition of Workshop Equipment) which notes each item of equipment in the present equipment inventory and whether it is retained in the PWD inventory or disposed of through survey (scrapping). This equipment has a present value of $80,000 U.S. (Public Works estimate) and would cost approximately $2,000 U.S. to repair prior to turn over to the District or to retain in the new shop. It was agreed to by PWD that this expenditure would be funded by PWD prior to moving into the new facility. This expenditure and repair action must be presented in the Project Agreement to assure it is carried out prior to turn over of the new equipment to PWD.

A complete listing of new shop equipment is provided as Table 11-2 to be purchased for tooling the Banjul Central Workshop and to supplement the old tooling that will be sent to the districts from Banjul. The workshop equipment list is broken down into 11 categories of equipment as follows:

1. Compressors and Generators
2. Hydraulic Equipment
3. Welding Equipment
4. Electric Equipment
5. Hoisting Equipment
6. Hand Tools and Tool Room Equipment
7. Machine Shop Equipment
8. Shop Equipment
9. Diesel Engine Testing
10. Office and Storeroom Equipment
11. Vehicles

This equipment listing also denotes item numbers in each category, quantities, brief description, numbers assigned to each facility, unit price and total cost FAS U.S. Port. The total cost for this component is $1,135,320 which is completely detailed in Table 11-4, Summary of Cost of Workshop Equipment.

The numbers of equipment considered for procurement was compared to the personnel staffing (see Table 11-3) of each facility to assure an adequacy of tools was being provided and that overstocking the facilities was being avoided. Training equipment is listed in the training annex of this report (Table 10-1). Some like items (tools) are included in both sections. This will assure that these items are identified properly as to where they belong. The shop master tool sets are complete sets of tools that will support a number of mechanics working from each set. These tool sets will be used in the gas and diesel repair shop and the general purpose tool sets will be used in the supporting workshops such as Welding, Blacksmith, Electric Fuel Injection, etc.

Shop Equipment Specifications

It is anticipated that the Equipment Maintenance Management Study team consisting of an Organization and Management Specialist, a Spare Parts Specialist and a Training Specialist will provide guidance to the workshop A/E Design Engineer in laying out the final design of the workshop in coordination with the Public Works Department. However, the A/E Engineer will prepare the final workshop equipment specifications. These specifications should take no longer than 10 working days to complete with all attachments, spare parts and shipping instructions. A representative of the A/E team will be on site for inspection and receiving of this equipment in Gambia and to assist with supervision of its installation.

Purchase Procedure

Due to the many varied types of equipment and the relatively small purchase value, it is recommended that this purchase be assigned to a purchase agent to accomplish. A sum of 6% of the total value of this order, $47,981, is required to accomplish the purchase and assume responsibility for supervision, inspection, packing, and FOB U.S. Port scheduling. This is a very nominal amount to accomplish these tasks as an A/E contract would be more costly. In addition, Public Works Department does not have the personnel or experience to handle this purchase through U.S. procurement.

Shipping

The location of Gambia in relation to U.S. shipping lanes appears to pose a problem in that direct shipping to the Gambia is not likely to be possible as only very large assignments of goods will be considered for direct shipping. Therefore, all equipment and material for this project will need to be transshipped either in England or if direct shipping is available to Dakar, Senegal, the shipment will be transported overland by truck to Banjul. Both of these routes should be studied with the shipping agents prior to contracting for purchase of equipment. Also, the Gambian Government has a ship that services their Government from England once a month. This use of the Gambian ship should be studied and discussed with the Gambian Port Authority on freight charges in local currency and also a decision from AID on use of non-U.S. ships.

Due to the uncertain conditions posed in shipping a sum of 23% value of equipment net price plus F.O.B. U.S. Port cost was used in these calculations for a total cost of CIF shipping of

amounting to $184,447. This is considered to be an adequate amount for this shipment as it is a high cost and high density shipment. In Table 11-2 - New Equipment Purchase List, the pricing schedule for FAS U.S. Port was used as this is considered to be the point where the suppliers payment will be made. It is recommended that 20% of the purchase price be withheld in this initial payment and full payment made on receipt and inspection of equipment in Gambia.

Spare Parts

The spare parts list must be prepared by the specification writers to include ample spares for the shop equipment for a period of 10,000 hours of operations. This will provide ample backup support fora period of 10 years. It is estimated that only a small percentage of this equipment value will require spares as items such as tool room and small shop tools will not require spares. An estimate of 3% of the net price was used for spare parts support and an amount of $22,835 is provided for this component.

It is suggested that the specification writers include their required spare parts support in the specifications with instructions to deliver these parts concurrently with the equipment.

TABLE 11-1

On Hand Workshop Equipment Disposition

Banjul Central Workshop

Description	Make	Age (Yrs.)	Disposition
Cleaner, Spark plug	Champion	5	*
Grinder, bench 5"	Black & Decker	5	*
Grinder, crankshaft	Prince	3	Mansakonko
Lathe, Engine 4"	Colchester	10	*
Lathe, Engine 10"	M.M.H.	10	*
Lathe Engine 12-24"	Elliot	5	Mansakonko
Drill press, Pedestal	Meddings	10	*
Drill press, Pedestal 18"	Grimson	6	Mansakonko
Boring Bar, Cyl.	Paddon	30	*
Boring Bar, Cyl.	Buma	1	Mansakonko
Grinder, Surface	Janita	1	Mansakonko
Milling, Horizontal	Milko	1	Mansakonko
Shaper	Elliot	1	Mansakonko
Refacer, value	Wolf	3	Move to new facility
Press Hyd. 50 T.	Bedfont	17	*
Vise, Bench 5"	4 each	-	2 Mansakonko
Vise, Bench 6"	-	-	1 Basse
			1 Georgetown
Brake, Reliner	-	-	*
Reconditioner, Injector	Merlin	5	Mansakonko
Tester Inj. Nozzle	Hartridge	3	Mansakonko
Anvils, 300, 500, 700 lbs.	-	-	Mansakonko
Forge	W. Allday	10	*
Generator, Acetylene	-	new	Move to new facility
Grinder, Pedestal 12"	-	12	*
Drill Press 16"	W. Meldings	10	*
Drill Press 20"	Elliot	10	*
Hacksaw, Power 14"	M.M.&H.	15	*
Hacksaw, Power 18"	Gate Mach. Co.	10	*
Threading Machine	Maiden Ltd.	10	*
Welder, 300 amp	Murex	10	*
Welder, 300 amp	Murex	6	*
Analyzer, Auto.	Crypton	2	Mansakonko
Charger, Battery 2 ea.	Crypton	2	*
Test Stand, Motor	Octopus	2	Mansakonko
Air Comp, 30 CFM	Ing. Rand	new	Mansakonko
Charger, tire HD	-	5	Mansakonko
Vulcanizer	-	2	Mansakonko
Hone, Cyl. Port.	-	-	Move to new facility

* To be scrapped.

TABLE 11-1

Description	Make	Age (Yrs.)	Disposition
Mansakonko Workshop			
Water Distiller	--	--	*
Chargers, Battery, 2 ea.	--	--	*
Armature Tester	--	--	*
Refacer Valve	Wolf	3	Remain on site
Drill Press	W. Meddling	10	*
Grinder, Bench 5"	--	--	*
Generator, Acetylene	--	new	Remain on site
Welder 150 amp	--	--	*
Vulcanizer	--	--	*
Hone, Cyl.	--	--	*
Press, Hyd. 20 T.	--	--	*
Lubrication Unit & Drums	--	--	*
Air Compressor 15 CFM	--	new	Remain on site
Washer, Pressure	--	--	*
Jacks, Floor 7 ton	--	--	*
Basse Workshop			
Compressor 15 CFP	--	--	Remain on site
Grinder, Bench	--	--	*
Vise, Bench 5"	--	--	*
Vulcanizer, tire	--	--	*
Distiller, Water	--	--	*
Circular Saw 12"	--	--	*
Georgetown Workshop			
Tester, Volt amp	--	--	*
Welding set Oxy acet.	--	--	*
Welder, Elect. 110 amp	--	--	*
Lubrication Unit 2 pumps and tank	--	--	*
Air Compressor 15 CFM	--	--	Remain on site
Distiller, Water	--	--	*
Lathe 8"	Colchester	10	*
Press Hyd. 25 T.	W. Meddling	10	*
Cleaner, Spark plug	Champion	5	*
Brake Reliner	--	--	*
Drill, Press	W. Meddling	10	*
Charger Battery	--	--	*

* To be scrapped.

TABLE 11-2

NEW SHOP EQUIPMENT LISTING

No.	Item No.	Quant.	Description	Distribution				Unit Price (FAS) U.S. $	Total Price (FAS) U.S. $
				Central	Mansa-konko	Basse	George-town		
	1	2	Compressor, shop 60 CFM	2				$ 3,300	$ 6,600
	2	1	Compressor, shop 15 CFM	1				1,900	1,900
	3	1	Generator, shop 30 K.W.		1	1	1	10,000	10,000
	4	3	Generator, shop 10 K.W.		1	1	1	3,500	10,500
	1	4	Tester, Hydraulic with attachment	1	1	1	1	2,200	8,800
	2	2	Puller, Hyd. gear and bearing 17.5 T.	1	1			2,200	4,400
	3	2	Puller, Cyl. sleeve 12.5 T.	1	1			990	1,980
	4	2	Press, sprocket & track pin 80 T.	1	1			4,400	8,800
	5	4	Press, Hyd. floor 100 T.	1	1	1	1	2,860	11,440
	6	3	Crane, Hyd. floor 5000 lbs.	2	1			1,540	4,620
	7	5	Jack, Hyd. floor 5 T.	2	1	1	1	125	625
	8	3	Jack, Hyd. floor 10 T.	2	1			175	525
	9	5	Jack, Hyd. stand 12 T.	2	1	1	1	110	550
	1	2	Welder, Elect. 300 amp. Elect. dr.	2				3,800	7,600
	2	4	Welder, Elect. 160 amp. Engine dr. Port.	1	1	1	1	2,000	8,000
	3	1	Welder, Elect. 400 amp. Diesel dr. Port.	1				4,700	4,700
	1	4	Chargers, Battery, constant current type	1	1	1	1	450	1,800
	2	4	Chargers, Battery, constant voltage type	1	1	1	1	400	1,600
	3	4	Tester, Battery, capacity 600 amp.	1	1	1	1	275	1,100
	4	5	Tester, Volt, amp portable	2	1	1	1	325	1,625
									$99,885

TABLE 11-2

NEW SHOP EQUIPMENT LISTING

Group No.	Item No.	Quant.	Description	Distribution: Central	Distribution: Mansa-konko	Distribution: Basse	Distribution: George-town	Unit Price (FAS) U.S. $	Total Price (FAS) U.S. $
4	5	2	Tester, Motor Generator	1	1			$ 6,000	$ 12,000
	6	3	Analizer, Engine Universal	2	1			2,500	7,500
	7	2	Cutter, Commutator	1	1			130	260
	8	2	Tester, Armature, Grounder	1	1			125	250
5	1	4	Stand, trans. repair	3	1			990	3,960
	2	4	Stand, Eng. Repair Universal	3	1			880	3,520
	3	4	Hoist, hand type 1.5 T.	1	1	1	1	220	880
	4	4	Hoist, hand type 3 T.	1	1	1	1	330	1,320
	5	2	Hoist, Elect. 1.5 T.	1	1			1,200	2,400
	6	9	Hoist, Elect. vehicle 10 T.	8	1			9,000	81,000
	7	1	Crane, Overhead travel 5 T.	1				20,000	20,000
	8	1	Crane, Overhead travel 2 T.	1				14,000	14,000
	9	2	Crane, Mobile Hyd. 15 T.	1	1			60,500	121,000
	10	1	Forklift,pnw tire 6000 lb.	1				38,500	38,500
6	1	5	Wrench, Torque ½" sq. dr.	2	1	1	1	220	1,100
	2	4	Wrench, Torque 3/4" sq. dr.	1	1	1	1	330	1,320
	3	1	Wrench, Torque 1" sq. dr.	1				440	440
	4	2	Tap & die sets, English & Metric th.	1	1			1,035	2,070
	5	7	Tools, Shop master sets/chests	4	1	1	1	5,500	27,500
									$ 339,020

TABLE 11-2

NEW SHOP EQUIPMENT LISTING

Group No.	Item No.	Quant.	Description	Distribution: Central	Distribution: Mansa-konko	Distribution: Basse	Distribution: George-town	Unit Price (FAS) U.S. $	Total Price (FAS) U.S. $
	6	6	Tools, General purpose sets/chests	2	2	1	1	990	$ 5,940
	7	5	Tools, Ind. Maint. sets/chests	2	1	1	1	2,860	14,300
	8	5	Tools, HD socket wrench sets/chests	2	1	1	1	440	2,200
	9	4	Timing light ignition	1	1	1	1	40	160
	10	5	Wrench, oil filter	2	1	1	1	11	55
	11	3	Compressor, ring, piston	2	1			11	33
	12	3	Spreader, ring, piston	2	1			11	33
	13	4	Giant Adjustable Wrench 24"	1	1	1	1	110	440
	14	4	Giant Adjustable Wrench 36"	1	1	1	1	130	520
	15	4	Drill, elect. ¼ " with 2 sets drills	1	1	1	1	88	352
	16	4	Drill, elect. ½" with 2 sets drills	1	1	1	1	110	440
	17	4	Drill, elect. 3/4" with 2 sets drills	1	1	1	1	220	880
	18	2	Wrench, HD spanner	1	1			55	110
	19	2	Micrometers 1-6" outside sets	1	1			225	450
	20	2	Micrometers 1-6" inside sets	1	1			125	250
	21	2	Depth gauge set 1-6"	1	1			75	150
	22	2	Calipers 1-6" English & Metric	1	1			40	80
	23	6	Tool room supplies, creepers trouble lights, hammers, oxy. acet. nuts, bolts, tubing, fittings, cleaning soap for stem cleaner, welding flux, masks, stingers, goggles, solder, rod assorted sizes, lapping compound, carbide battery hyd, pliers, carriers, etc.	3	1	1	1	200	1,200
	24	2	Tools Body & Fender set	2				400	800
									$28,393

TABLE 11-2

NEW SHOP EQUIPMENT LISTING

Group No.	Item No.	Quant.	Description	Distribution: Central	Distribution: Mansa-konko	Distribution: Basse	Distribution: George-town	Unit Price (FAS) U.S. $	Total Price (FAS) U.S. $
7	1	2	Grinder, HD valve seat	1	1			$ 770	$ 1,540
	2	1	Bar Cyl. boring	1				1,320	1,320
	3	2	Hone, connecting rod	1	1			880	1,760
	4	5	Grinder Bench 6" with extra wheels	2	1	1	1	165	825
	5	5	Grinder Pedestal 8" with extra wheels	2	1	1	1	760	3,800
	6	2	Reamer, Ridge, Cyl. 205" diam.	2				220	440
	7	2	Hack saw, power min. 10" cut	2				1,540	3,080
	8	2	Lathe, Brake drum 24"	2				2,000	4,000
	9	1	Lathe, turning 6"	1				3,600	3,600
	10	4	Lathe, turning 12"	1	1	1	1	6,800	27,200
	11	1	Lathe, turning 16"	1				10,500	10,500
	12	5	Drill Press, pedestal mtd. with drill set	2	1	1	1	7,200	36,000
	13	1	Grinder, surface, Cyl. head	1				9,000	9,000
	14	1	Line boring machine 100"	1				2,200	2,200
	15	1	Shear & Punching Machine	1				9,900	9,900
	16	1	Threading Machine	1				4,400	4,400
	17	1	Hone, Cyl. HD Engine	1				150	150
	18	1	Brake Relining Machine	1				350	350
	19	1	Crankshaft Grinder	1				28,000	28,000
	20	1	Milling Machine, horizontal	1				10,000	10,000
	21	1	Shaper	1				8,000	8,000
									$ 166,065

TABLE 11-2

NEW SHOP EQUIPMENT LISTING

No.	Item No.	Quant.	Description	Distribution: Central	Mansa-konko	Basse	George-town	Unit Price (FAS) U.S. $	Total Price (FAS) U.S. $
8	1	4	Cleaner, Steam, HD washer	1	1	1	1	$ 4,400	$ 17,600
	2	4	Demounter, tire standard duty	1	1	1	1	1,900	7,600
	3	4	Demounter, tire HD	1	1	1	1	2,200	8,800
	4	4	Balancer, wheel, static	1	1	1	1	225	900
	5	5	Gauge Wall mtd. tire pressure/hose	2	1	1	1	35	175
	6	4	Distiller, water	1	1	1	1	75	300
	7	2	Port. power set 10 T.	1	1			425	850
	8	2	Grinder portable surface 7"/wheels extra	1	1			110	220
	9	2	Forge, Elect.	1	1			725	1,450
	10	1	Heat treating plant	1				2,500	2,500
	11	2	Tools, blacksmith sets	1	1			450	900
	12	4	Anvils 500-700 lbs.	2	2			175	700
	13	4	Pipe benders	1	1	1	1	30	120
	14	6	Guns, paint, self cont. 1 ltr. pot.	3	1	1	1	40	240
	15	2	Degreasing tank	1	1			1,500	3,000
	16	4	Lubrication Units stationary Elect. dr.	1	1	1	1	4,400	17,600
	17	1	Dynamometer Engine 60-400 HP	1				22,000	22,000
	18	2	Sewing Machine, heavy duty	1	1			900	1,800
	19	4	Circular wood saws, 12"	1	1	1	1	1,000	4,000
9	1	3	Tester Compression, Gas & Diesel	2	1			165	495
	2	1	Tester Fuel Pump, Universal	1				19,800	19,800
	3	1	Tester Fuel Injection Repair	1				990	990
	4	1	Tester Radiator Repair with tools	1				6,000	6,000
	5	4	Air Conditioner Units	4				350	1,400
									$119,440

TABLE 11-2

NEW SHOP EQUIPMENT LISTING

Group No.	Item No.	Quant.	Description	Distribution: Central	Mansa-konko	Basse	George-town	Unit Price (FAS) U.S. $	Total Price (FAS) U.S. $
10	1	12	Fans, Extractor Min. 14"	9	1	1	1	$ 40	$ 480
	2	3	Typewriter 14", 18", 24"	3				425	1,275
	3	1	Copy Machine, Photo	1				1,200	1,200
	4	4	Calculators, desk	4				200	800
	5	1	Internal Intercom System	1				900	900
	6	2	Fuel storage tanks 2,000 gal.	2				2,500	5,000
	7	1	Fuel storage tanks 1,000 gal.	1				2,200	2,200
	8	4	Pumps, gasoline with meters, hose & valve	1	1	1	1	800	3,200
	9	4	Pumps, diesel with meters, hose & valve	1	1	1	1	800	3,200
	10	60	Extinguishers, dry powder type	30	10	10	10	20	1,200
	11	300	Bins, spare parts storage, steel	200	100			5	1,500
	12	20	Files, cardex, stock record card	10	10			75	1,500
	13	4	Microfilm reader set	2	2			550	2,200
	14	2	Banding Machine/extra bands	1	1			40	80
	15	2	Typewriter embossing/extra tapes	1	1			40	80
									$ 24,815
11	1	2	International Scout Traveler 4WD	2				10,500	$ 21,000
									$ 21,000

TABLE 11-3

Present Personnel Staffing and Projected Needs

Present Staffing				1982 Personnel Needs			
TRADES	TOTAL NUMBERS	GRADES	MONTHLY SALARY RANGE	BANJUL CENTRAL WORKSHOP	MANSAKONKO DISTRICT WORKSHOP	GEORGETOWN DISTRICT WORKSHOP	BASSE DISTRICT WORKSHOP
Mechanics, HD	20	G3-G7	D 120- D 253	20*	XX	X	X
Mechanics, Auto	62	G3-G7	D 120- D 253	31*	11* XXX	10* X	10* X
Machinists	27	G3-G7	D 120- D 253	27*	XXX	X	X
Welders & Blacksmiths	14	G3-G7	D 120- D 253	10*	2* XXX	XX	XX
Electricians	13	G3-G7	D 120- D 253	10*	2* XXX	1* X	XX
Fuel Pump	4	G3-G7	D 120- D 253	4*			
Body & Fender	4	G3-G7	D 120- D 253	4*	X		
Tire Shop	10	G3-G7	D 120- D 253	6*	2*	1*	1*
Painter	2	G3-G7	D 120- D 253	2*	X		
Carpenter	1	G3-G7	D 120- D 253	1*	X		

TABLE 11-3

Present Personnel Staffing and Projected Needs

	Present Staffing			1982 Personnel Needs			
TRADES	TOTAL NUMBERS	GRADES	MONTHLY SALARY RANGE	BANJUL CENTRAL WORKSHOP	MANSAKONKO DISTRICT WORKSHOP	GEORGETOWN DISTRICT WORKSHOP	BASSE DISTRICT WORKSHOP
Storemen	5	G3-G7	D 120-D 253	5*	X	X	X
Tailor	1	G3-G7	D 120-D 253	1*			
Helpers (Mates)	55	G2	D 118-D 133	42*	6*	2*	5*

* Present staffing levels.

X = PWD recommended staff increasing for 1985 needs.

All grades from G3 to G7 are considered to be Journeymen or Tradesmen while the Helpers or Matee are in a 5-year apprentice program which only promotes the qualified personnel at the end of that period and some will continue after the 5-year period in the Grade 2 status. The present staffing of the workshops is only 15 personnel short of the recommended staffing, which will be completed from the mates ready for promotion during this fiscal year.

TABLE 11-4

Summary of Cost of Workshop Equipment

1.	Equipment FOB Factory	$ 761,166
2.	Plus 3% Spare Parts	22,835
3.	Total Equipment and Spare Parts	784,001
4.	FAS U.S. Port (Plus 2% of Line 3)	15,680
5.	Total Equipment and Spare Parts FAS U.S. Port	799,681
6.	Shipping (23%)	184,447
7.	Total Equipment and Spares CIF Banjul	984,128
8.	Purchase Agent's Fee (6% of Line 5)	47,981
9.	Total Cost CIF Banjul	1,032,109
10.	Contingencies (10%)	103,211
11.	Total	$1,135,320

Annex 12

Workshop Construction Details

A. Construction Cost Estimates

The proposed facility contains approximately 7500 square meters under roof, the large proportion of which will be open to the air on the sides, facilitating access to the repair facilities, permitting fresh air ventilation, and in general reducing the unit cost of the structures. These open air areas may include some sort of fence or other device to restrict access; however, since the entire yard will be restricted to PWD personnel and other authorized personnel, and since no private vehicles will be permitted in the compound, this extra secruity may not be necessary.

The buildings will utilize steel frame construction, roofed with corrugated aluminum sheets or other material that offers equal protection, durability and ease of maintenance. The buildings that will be fully enclosed are those that require protection from dust and heat, office space, and areas that require special security.

The layouts and type of construction shown in this annex are suggestive in nature and not meant to commit the A/E designer or the PWD. The area for each shop activity is minimal for PWD operations, and a re-evaluation of the requirements by the A/E may result in some increase in some shops.

The cost estimates are based on three basic types of construction within the compound. The Type "A" buildings, providing complete shelter, will be used where such an ambience is required for practical or security reasons. These buildings are anticipated to be standard "brick and mortar" type of construction with corrugated aluminum roofing and steel roof trusses.

Two of the largest building (Main Maintenance Shop and Quick Repair Shop) are proposed to be basically open shops, with steel frame members and corrugated aluminum roofs. The open sides will reduce the cost considerably over that of a completely enclosed area, but still will permit the desired activities, primarily changes of components. This type of construction has been designated as Type "B".

The third type of building to be employed would be partially open and may have one, two or three walls, depending on the operation for which the building is to be used. Design will be simple, using masonry walls and/or light steel frame construction with aluminum roofing. While such construction is inexpensive, it is considered to be more than adequate for the facilities so determined.

In addition to the buildings, the contract will also include site preparation, paving of areas not covered by buildings, security fencing and lighting, fuel storage and delivery points, and fenced areas for vehicles to be surveyed and vehicles "deadlined" for lack of parts that are not expected to be available within a reasonable time period.

Utilities

A main water line and 11,000 KV transmission line are located in the Kotu Parkway area. The GOTG will bring these services to the site as a part of the host country contribution. The project will contain a standby generator of ample capacity to supply all of PWD's needs, as long outages of electricity are quite common in the Banjul area.

There is no sewerage system in Banjul, except for open or partially covered ditches in portions of the city proper, nor is a septic tank-leaching field system used. The large facilities all use a holding tank system that is periodically pumped out and sewage disposed of in a designated area. This system will be used for the PWD workshop.

TABLE 12-1

WORKSHOP FACILITIES AND AREA REQUIRED

	Covered Area Metres	M^2
Reception Office	4 x 4	16
Wash bay	--	--
Lubrication	15 x 20	300
Tires	10 x 10	100
Two Compressor Rooms	2 x 5 x 5	50
Panel Beating	10 x 15	150
Blacksmith and Welding	10 x 30	300
Quick Repairs	15 x 40	600
Fuel injection (with office)	7 x 7	50
Auto electric shop (with office)	10 x 10	100
Battery charging	5 x 10	50
Main Workshop with two floor, offices, toilets and locker room	50 x 55	2750
Stores	20 x 80	1600
Final inspection office	4 x 4	16
Painting	5 x 10	50
Carpenter and Upholstery	10 x 10	100
Machine Shop (with office)	10 x 30	300
Engine overhauls	10 x 20	200
Degreasing	5 x 10	50
Engine testing	8 x 12	100
Administration Offices (with toilets etc.)	10 x 40	400
Fuel and Oil Depot	10 x 20	200
Three Security Offices	3 x 4 x 4	48
TOTAL		7530

Paving: 25,500 m^2
Security Fencing: 1,000 l.m.

TABLE 12-2

Workshop Cost Estimates

	Area	Cost/ sq. mt.	Total Cost (000)
A. Type 'A' Buildings			
1. Administration Bldg	400 sq.mt.	275	110
2. Training Classrooms	180 sq.mt.	275	50
3. Fuel Injection	50 sq.mt.	300	15
4. Stores (Parts Storage)	1600 sq.mt.	180	288
5. Compressor Rooms	50 sq.mt.	260	13
6. Electric Shop	100 sq.mt.	260	26
7. Battery Shop	50 sq.mt.	260	13
8. Paint Shop	50 sq.mt.	260	13
9. Machine Shop	300 sq.mt.	260	78
10. Engine Overhaul	200 sq.mt.	260	52
11. Engine Test	100 sq.mt.	260	26
12. Misc. (Guard Room, Front Office and Reception)	80 sq.mt.	260	21
Sub-total Type 'A'			$705
B. Type 'B' Buildings			
1. Main Workshop	2700 sq.mt.	220	594
2. 'Quick Repair' Shop	600 sq.mt.	180	108
Sub-total Type 'B'			$702
C. Type 'C' Buildings			
1. Lube Shop	300 sq.mt.	100	30
2. Tire Repair	50 sq.mt.	100	5
3. Body Shop	150 sq.mt.	100	15
4. Blacksmith/ Welding Shop	300 sq.mt.	100	30
5. Carpentry/Upholstery Shop	100	100	10
6. Degreasing Shop	50	100	5
Sub-total Type 'C'			$ 95

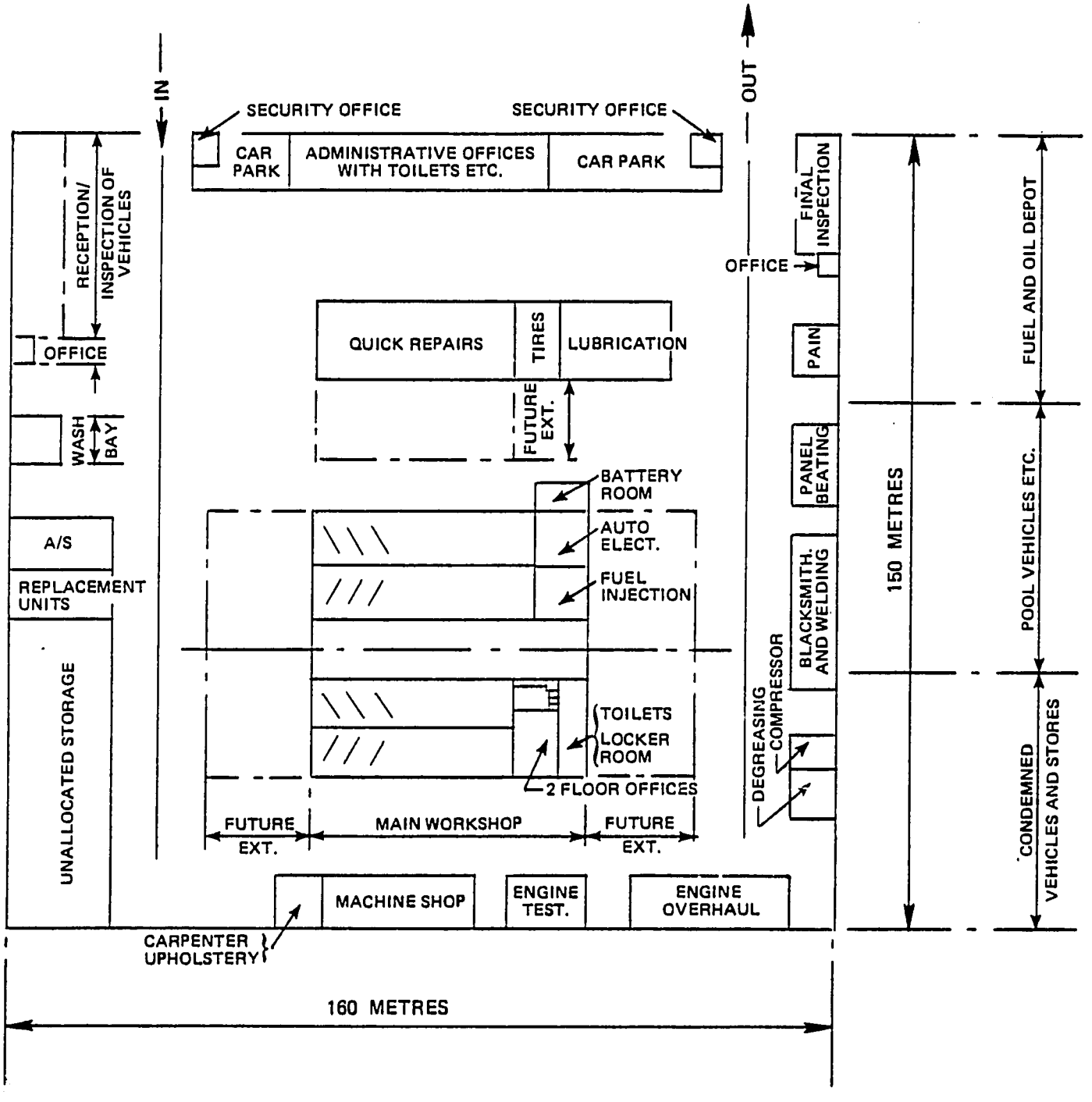
Total A, B & C	$ 1,502
Contingencies (15%)	225
TOTAL	$ 1,727

2.	Security Fence 1000m @ 40/m.	$40
	Contingencies (12%)	5
	Total Fence	$45
3.	Site Preparation and Paving 25,500 sq.mt. @ $7.5/sq.mt.	$191
	Contingencies (15%)	29
	Total Site Preparation	$220
4.	Design Services and Construction Supervision	$230
	Contingencies (20%)	45
	Total Design and Supervision	$275

Summary - Workshop and Yard Costs ($000)

1.	Buildings	$1,727
2.	Fence	40
3.	Site	220
	Total Construction Cost	1,987
4.	Design and Supervision	275
	Total Workshop Cost	$2,262

FIGURE 12-1

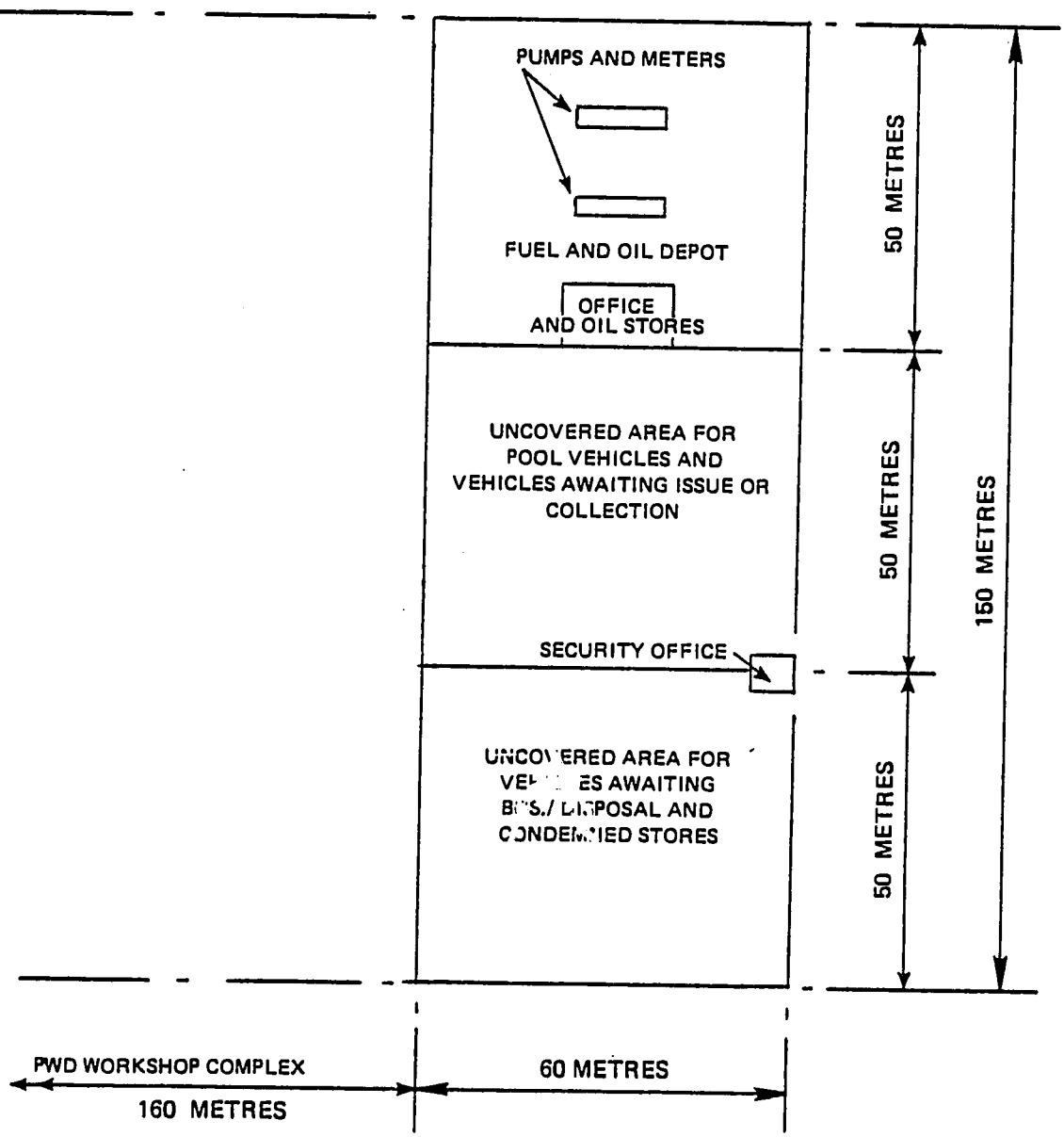


PROPOSED LAYOUT OF PWD WORKSHOP COMPLEX

Sketch by: F. BALL
Senior Mechanical Engineer
PWD Banjul 24-1-79

SCALE: 1" = 30 Metres

FIGURE 12-2



PROPOSED LAYOUT OF:

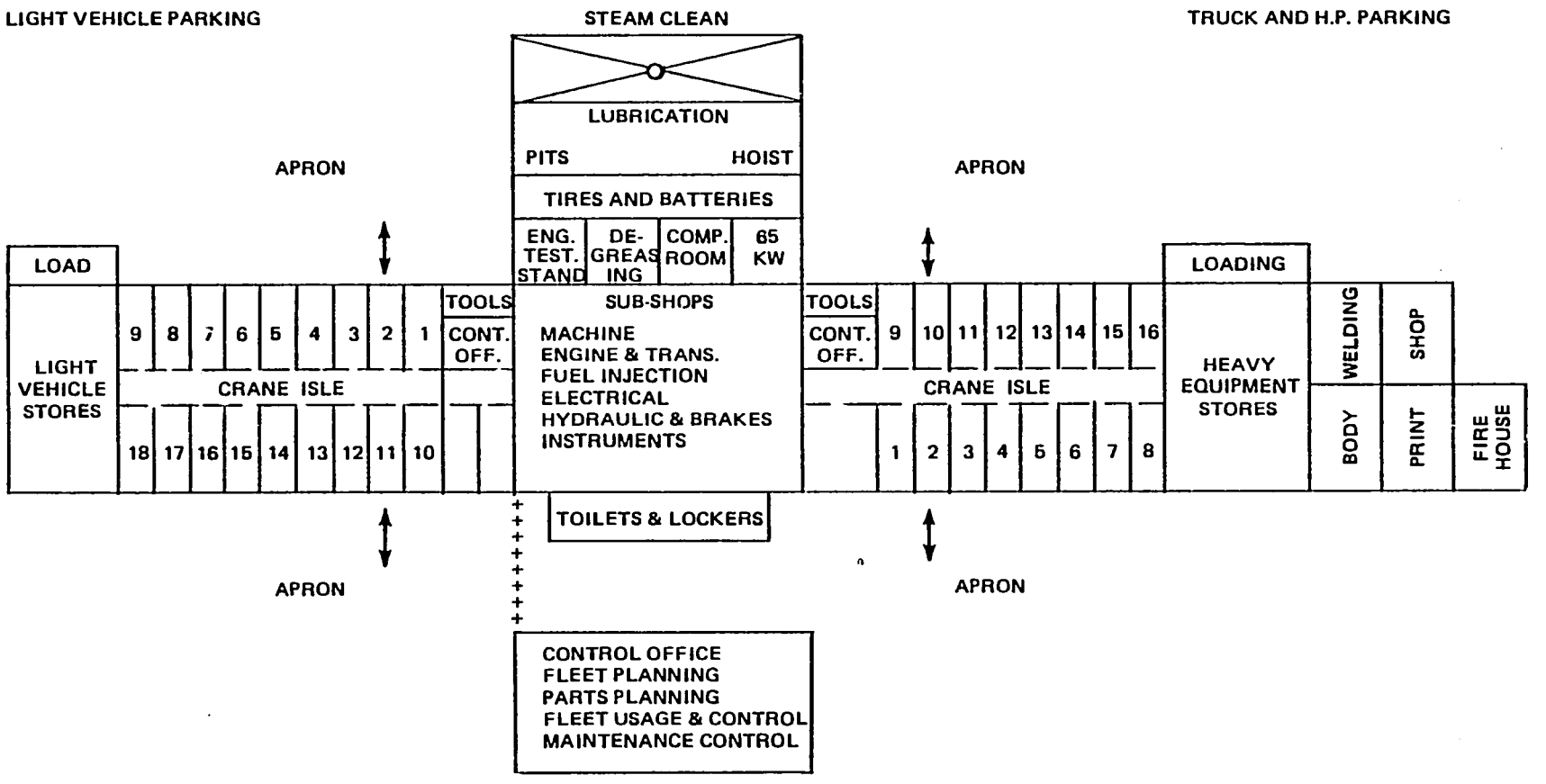
a) Fuel and Oil Depot

b) Transport Area

c) Condemned Vehicles and Stores Area

Sketch by: F. BALL
Senior Mechanical Engineer
PWD Banjul 24-1-79

SCALE: 1" = 30 Metres



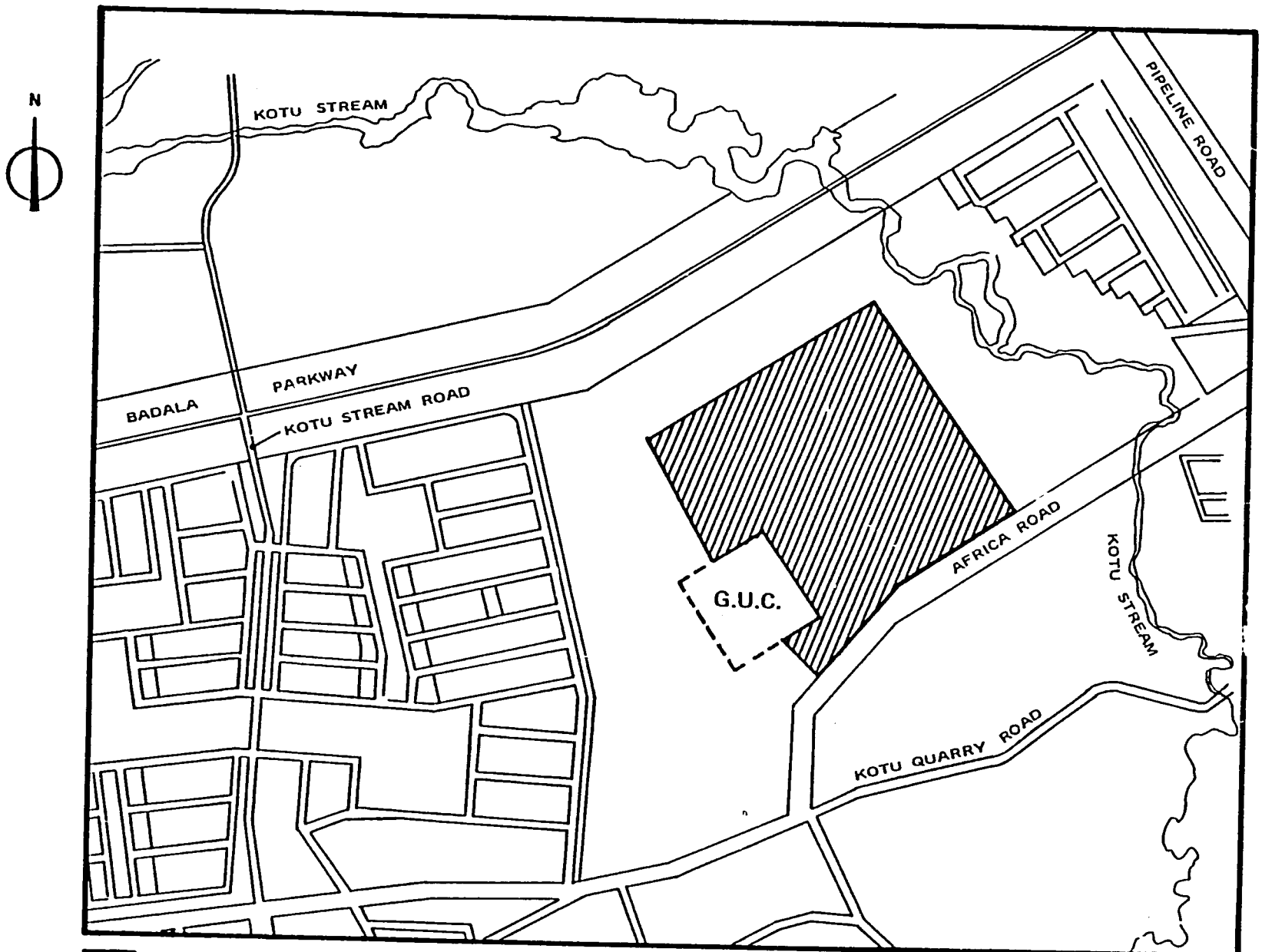
NEW WORKSHOP PROJECT

FIGURE 12-3

Source: Road Maintenance Diagnostic Study for the Sahel: Volume 3, The Gambia. CILSS/Club du Sahel Transport and Infrastructure Working Group, July 1977.

FIGURE 12-4

PROPOSED WORKSHOP SITE



Approximate Area Proposed for PWD

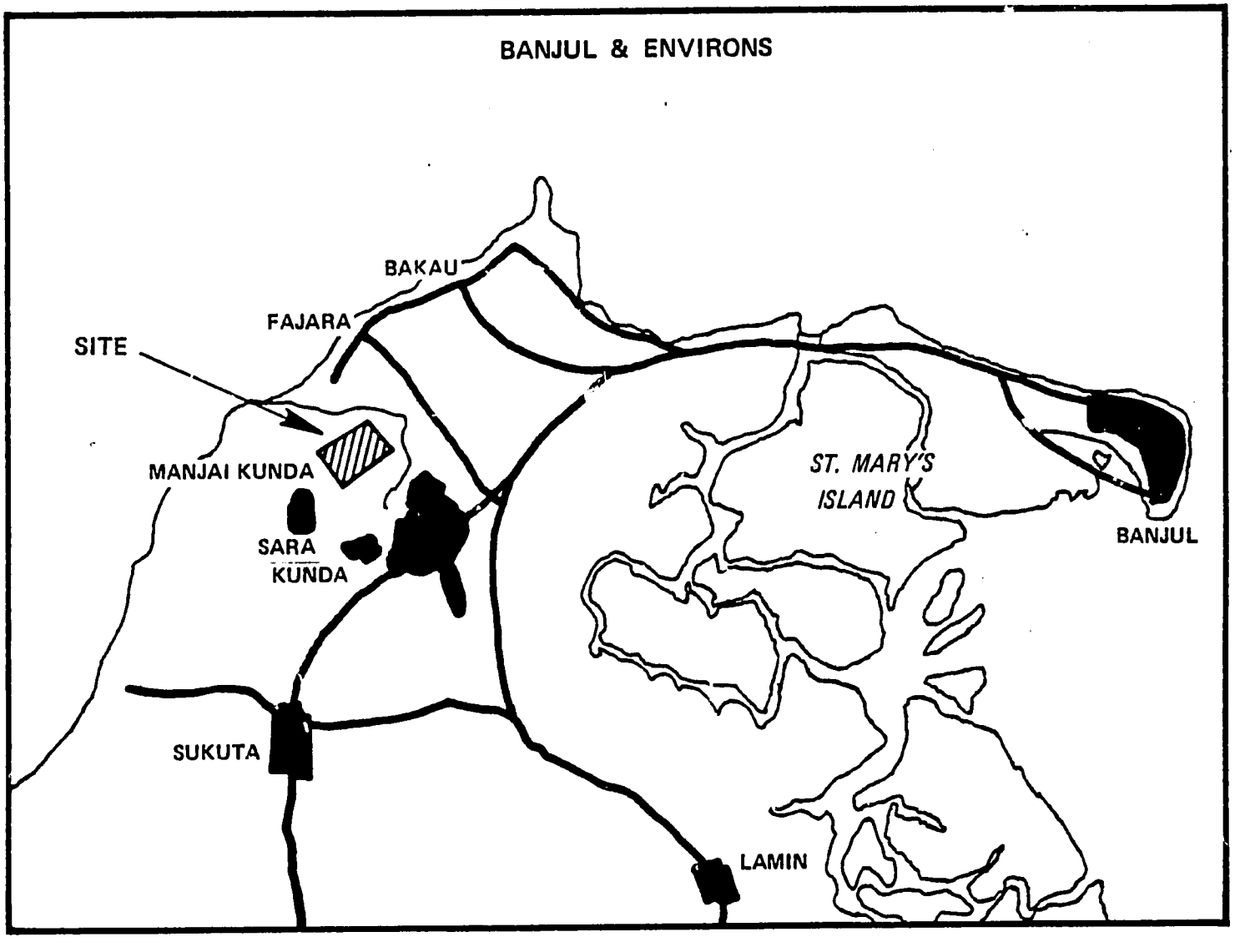
Source: Kotu Quarry Depot Sites Drawing prepared by PWD, The Gambia

Feet 500 1000 1500

Meters 100 200 300 400

SCALE 1:5000

FIGURE 12-5


BANJUL & ENVIRONS
BAKAU
FAJARA
SITE
MANJAI KUNDA
SARA
KUNDA
SUKUTA
ST. MARY'S
ISLAND
BANJUL
LAMIN

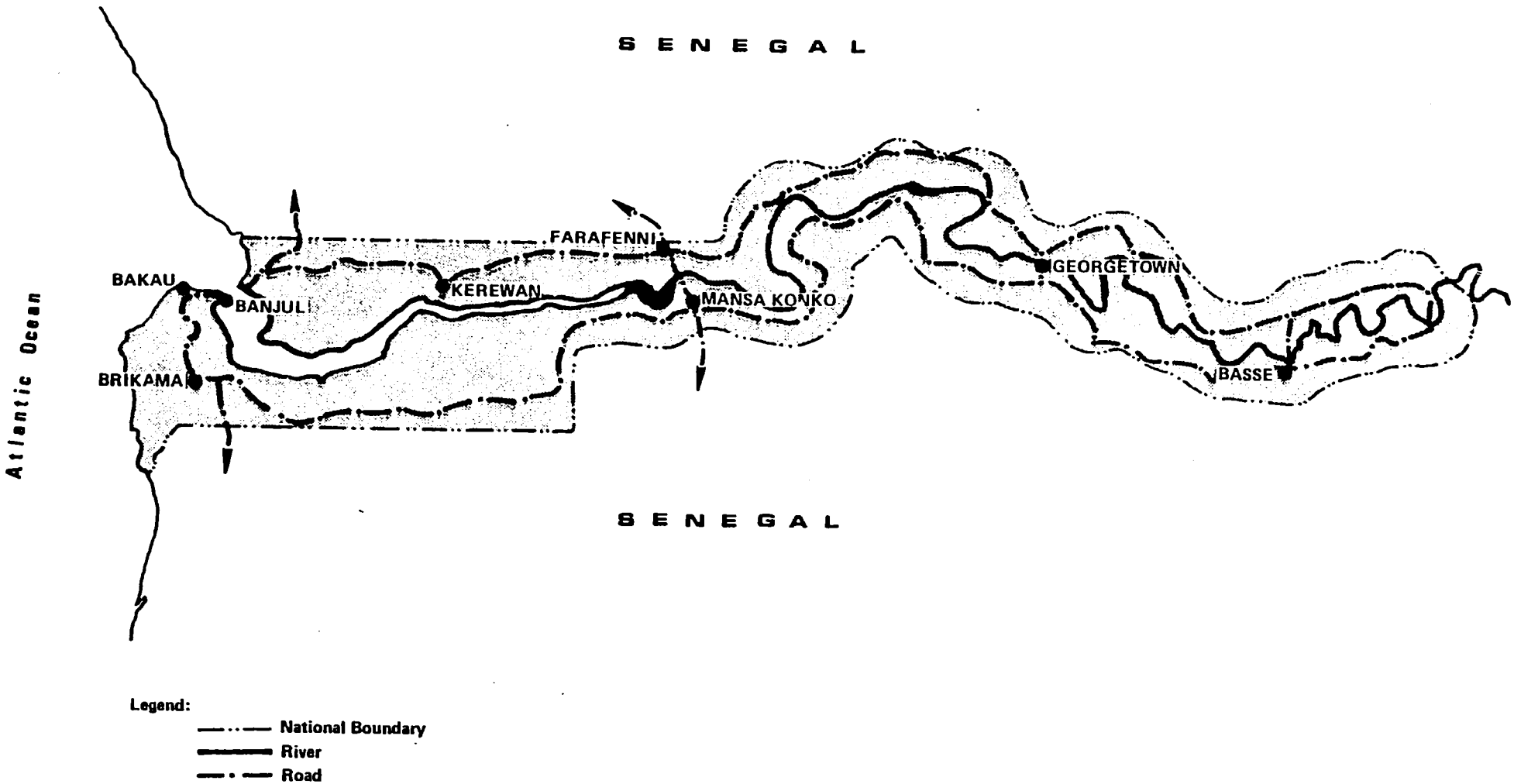

SENEGAL
SENEGAL
Atlantic Ocean
BAKAU
BANJUL
BRIKAMA
KEREWAN
FARAFENNI
MANSA KONKO
GEORGETOWN
BASSE
Legend:
National Boundary
River
Road

FIGURE 12-6

ANNEX 13

Equipment Maintenance Management System Study
Terms of Reference (Outline)

I. Introduction

The proposed maintenance management program will consist of a team of three short-term experts to design an equipment maintenance management system for the central and regional workshops, to recommend changes as needed to improve the spare parts stock control procedures, to assist the A/E contractor in the design of the new workshop to accommodate the proposed management procedures, and to assist the PWD in designing a training program.

II. Objectives

The purpose of the services are:

1. To improve the operational efficiency of the PWD Mechanical Division.

2. To design maintenance and workshop procedures for operation of the central and district workshops.

3. To assist the A/E contractor in the design of the new workshop to accommodate proposed work procedures.

4. To recommend desirable improvements in spare parts procurement procedures and inventory control.

5. To recommend a training program to meet identified skill needs in the PWD, including objective evaluation methods and procedures for skill certification.

6. To design and collect data for workshop performance evaluation.

III. Scope of Maintenance Management Service

1. General

The maintenance management experts shall perform the functions and services herein described, as required to attain the objectives set out in Section II above. Three types of specialist are to be provided - Organization and Maintenance Specialist, Supplies Specialist, and Training Specialist. In performance of the services the specialists shall cooperate fully with the Government, which is to assign counterpart personnel to work in close cooperation with the experts. Approximately eight and one-half man-months are estimated to be required.

In the conduct of these services, the specialists will take into account the data collected in connection with and the recommendations included in the AID Project Paper.

2. Work Tasks

Subject to any revisions AID may deem necessary, the maintenance management experts shall prepare specific recommendations for implementing the following measures as detailed in the Technical Feasibility study.

a. Recommend job control systems, together with internal reorganization of the present organization to achieve a smooth flow of the different categories of work performed.

b. Recommend desirable improvements in spare parts procurement, procedures and inventory control.

c. Recommend desirable improvements in workshop costs accounting procedures.

d. Recommend a program for the repair or rehabilitation of the existing workshop equipment that will be retained in the workshops.

e. Provide informal guidance to the A/E contractor which will be responsible for a final design of the new workshop which assures efficient operation and appropriate patterns of work flow.

f. Work with the PWD training officer to identify skill needs of workshop personnel and to establish performance standards corresponding to Civil Service grades.

g. Plan a training program to meet identified skill needs in the PWD, including objective evaluation methods and procedures for skill certification.

h. Design an evaluation program for workshop performance and collect baseline data.

i. Recommend changes, if necessary, in the scope of work for the technical assistance contract.

j. Delineate any changes in the powers and authorities of the PWD, the MWC, and other ministries which may be necessary to implement the study's recommendations effectively.

IV. Timing

The services will be carried out by three technicians, in a three month period, commencing about 1 March 1980 and terminating about 1 June 1980.

During the study period, the experts will carry out the necessary review work indicated in Section III and shall prepare specific procedures and recommendations to AID and the GOTG for approval and for the long-term specialists' implementation.

V. Reports

The experts shall submit the following reports:

1. An Inception Report (10 copies to the GOTG, and 10 copies to AID) within one month following the starting date, summarizing the methodology and procedures for conducting the study including the preliminary findings and conclusions.

2. Draft Final Report (10 copies to the GOTG and 10 copies to AID) within three months following the starting date, which will: (a) describe the proposed equipment management system, (b) describe in detail the analyses used to develop the proposed system, (c) identify potential implementation problems and alternative approaches, (d) present inputs to workshop design, (e) describe progress made toward the design and implementation of a PWD training program, (f) present an evaluation program design and baseline data, and (g) make recommendations on the scope of further technical assistance to the PWD.

3. Final Report (number of copies to be determined by the GOTG and AID) within one month of receipt of comments on the draft final report from the GOTG and AID, incorporating all required revisions.

VI. Data, Local Services and Facilities to be Provided by the Government

A. Data

The Government will provide the experts with all available information that may be reasonably required for the services.

B. Cooperation of Government Agencies

In connection with the experts' work that requires the cooperation of other Government agencies, the Government will

provide liaison and will ensure that the experts have access to all information required during these services.

C. Facilities and Supporting Staff

The Government will provide the following facilities and staff to help the experts perform these services in The Gambia:

1. Office space, furniture, equipment and office supplies (to be defined).

VII. Local Services and Facilities to be Provided by the Contractor

1. Administrative, secretarial, clerical services (to be defined).

2. Transportation in The Gambia.

3. Utilities, telephone, postage and telegraph services.

Annex 14

TECHNICAL ASSISTANCE

Terms of Reference (Outline)

I. Introduction

The proposed Technical Assistance consists of a team of two long-term experts to implement the proposed systems for maintenance management and to provide technical direction for workshop activities. These experts would also be actively involved in training of workshop personnel.

II. Objectives

1. Supervise workshop activities related to the AID project.

2. Implement the recommendations of the maintenance management study.

3. Provide on-the-job training and participate in the formal training program.

4. Monitor change in workshop performance.

5. Ensure that workshop operations serve the needs of road maintenance.

III. Scope of Technical Assistance Services

1. General

Two types of specialists are to be provided: an equipment management systems specialist and a master mechanic.

The technical assistance experts shall perform the functions and services herein described, as required to attain the objectives set out in Section II above. In performance of the services the specialists shall cooperate fully with the Government, which is to assign counterpart personnel to work in close cooperation with the experts and provide the data and services outlined in Section VI hereof.

In the conduct of these services, the specialists will take into account the data collected in connection with and the recommendations included in this Project Paper.

2. Work Tasks

The technical assistance experts shall implement the following activities:

a. Assist in implementing the recommendations of the maintenance management study team, including workshop procedures, and management systems.

b. Assist in supervision of the repair and maintenance of all vehicles and road maintenance equipment for which PWD is responsible.

c. Provide on-the-job training to counterpart personnel.

d. Provide training to central and district workshops through regular scheduled visits and demonstrations.

e. Provide training to senior workshop staff in management methods such as the scheduling of routine and periodic equipment maintenance.

f. Assist the PWD Training Officer in designing and implementing an ongoing training program.

g. Receive new equipment and supervise its installation in the new Central Workshop.

h. Supervise the rehabilitation and reassignment of existing workshop equipment.

i. Periodically collect data for workshop performance evaluation.

IV. Timing

The services will be carried out by two technicians over a three year period, commencing about October 1980 and terminating in October 1983.

During this phase of 36 months, the agreed plan of action will be implemented and the experts will provide day to day assistance to the PWD staff both at the central repair shop and in the divisions.

V. Reports

The experts shall submit the following reports:

1. An Inception Report (10 copies to the GOTG, and 10 copies to AID) within two months following the starting date, summarizing the arrangements for conducting the technical assistance, including the preliminary findings and conclusions of the experts.

2. Progress Report (10 copies to the GOTG and 10 copies to AID) at monthly intervals following the submission of

the Inception Report, giving a general statement on the progress of the technical assistance and status of training programs, together with summaries of work performed by each member of the specialist team.

3. Draft Final Report (10 copies to the GOTG and 10 copies to AID) within thirty-four months following the starting date, detailing: (a) work performed during the services; (b) the progress made in implementing recommendations; (c) benefits resulting from the recommendations; (d) areas (if any) in which progress has been unsatisfactory; and (e) recommendations on the need (if any) for further technical assistance to the PWD.

4. Final Report (number of copies to be determined by the GOTG and AID) within two months of receipt of comments on the Draft Final Report from the GOTG and AID, incorporating all revisions deemed appropriate by the experts.

VI. Data, Local Services and Facilities to be Provided by the Government

A. Data

The Government is to provide the experts with all available information that may be reasonably required for the services.

B. Cooperation of Government Agencies

In connection with the Consultant's work that requires the cooperation of other Government agencies, the Government is to provide liaison and is to ensure that the experts have access to all information required during these services.

C. Facilities and Supporting Staff

The Government is to provide the following facilities and staff to help the experts perform these services in the Gambia:

1. Office space, furniture, equipment and office supplies (to be defined).

2. Administrative, secretarial, clerical services (to be defined)

3. Transportation in the Gambia.

4. Utilities, telephone, postage and telegraph services.

5. The Government is to assist and guide the experts in locating satisfactory and appropriate living accommodations.

ANNEX 15

Summary Description of
IBRD-EEC Project

Background

The Government of the Gambia's development objectives for the transport sector, as expressed in the present Five-Year Plan, emphasize improvements in the national road network. In October, 1977, the GOTG indicated to the World Bank its intentions to undertake improvements in road maintenance. A grant of $100,000 from the Bank's Project Preparation Facility was made to enable the GOTG to hire consultants to analyze present road maintenance practices and to recommend an improvement program. This study was carried out by RPT Economic Studies Group. The Final Report was submitted in January, 1979 and contributed to the design of the IBRD-EEC project.

In contrast to the RPT Report's recommendations, Bank officials felt that the Gambia's present financial and manpower constraints precluded the implementation of a program designed to meet all potential maintenance needs by 1985. Instead, the Bank recommended a phased program which would gradually improve the maintenance operations currently carried out by PWD. During the first phase (FY 80-83), this program will permit the routine maintenance of the nation's primary and secondary network (roads presently under PWD responsibility), and provides for backlog periodic maintenance on major unpaved roads. If this phase is successful in building up PWD road maintenance capabilities, a second phase will be undertaken in which the national needs for periodic maintenance of paved roads will be addressed, and the network under PWD responsibility will be expanded to include feeder roads currently being improved to all-weather standards.

One major issue in the periodic maintenance of paved roads in the Gambia is the lack of good aggregate materials for road surfacing. Up to the present time, the PWD has mostly used crushed shells as a surface aggregate. Known surface deposits of such shells are now nearly exhausted. Good quality laterite is available only in a few areas, and basalt, used in paving the short Trans-Gambia Highway link, must be imported from Senegal or other sources at considerable expense. In view of the potential significance of this issue, a study of available aggregates and an economic analysis of alternatives is foreseen as part of the first phase of the IBRD-EEC project.

Description

About 780 km. of selected primary and secondary roads will be included in the program for routine maintenance. About 190 km. of major laterite roads have been selected for periodic maintenance in addition to routine maintenance. (See attached map, Figure 15-2.) The program will be carried out by force account by PWD's three regional divisions with expatriate technical assistance.

Routine maintenance will be carried out by the following units:

16 manual gangs to cut grass, clear ditches and culverts, restore shoulders and repair road signalization, bridges and culverts along all paved and unpaved roads;

1 mechanical unit to carry out grading on laterite roads, and

1 patching unit to fill potholes and provide spot single and double-surfacing for paved roads.

The proposed routine maintenance strategy is described below:

a.	Paved roads (350-420 km)	Daily traffic: 310-8,000 vehicles (average 1000)
	Manual gang:	1 unit for 50 km
	Patching gang:	1 unit for 350 km
b.	Unpaved roads (360-450 km)	Daily traffic: 60-230 vehicles (average 160)
	Manual gang:	1 unit for 50 km
	Dry grading:	2-5 gradings/year (according to traffic volume)

Backlog periodic maintenance of laterite roads (190 km) will be carried out by a mechanized unit, which will open and work laterite quarries, transport, place and compact materials to an average standard of an 8-meter carriageway and 15 cm thick compacted surface material. Estimated annual output of the unit is 60-65 km per year.

Backlog maintenance will be carried out on the following road links:

1. Kerawan-Farafenni (57 km)
2. Farafenni-Laminkoto (115 km)
3. Yoroberi Kunda-Bansant (18 km)

These roads are scheduled to be regravelled between October 1, 1980 and September 30, 1983. Following this initial program, the mechanized unit will continue on other roads to be selected by PWD.

The proposed project will provide the necessary equipment, vehicles and spare parts to carry out routine maintenance and backlog periodic maintenance by force account. The Government has agreed to assign some equipment and vehicles to the project. However, most existing PWD equipment will be fully depreciated before and during the program. Therefore, only eight trucks from the Central Workshop's pool will be used for the routine maintenance units to complement the vehicle fleet provided under this project. Spare parts will be procured for the new equipment and for the trucks provided by the Government. This will create a small stock and will assure the rehabilitation of the trucks.

In order to accelerate the transportation and repair of heavy equipment, the project provides a 20-ton low-bed trailer and tractor. Routine, minor repairs will be handled by the mobile repair unit under the supervision of the expatriate senior mechanic assigned to it. Major repairs will continue to be done in the Central Workshop under the supervision of the expatriate master mechanic. Possible consequences of equipment breakdown will also be alleviated by renting the necessary equipment from contractors. Physical contingencies are included in the proposed project to cover this possibility.

The mobile workshop and the senior and master mechanics will be financed by the project, as will be spare parts for the road maintenance equipment. These inputs will relieve some of the potential constraints on the success of the road maintenance program. The project will not assist PWD in carrying out its other responsibilities. No formal training program for workshop staff is proposed, although some on-the-job training of equipment operators and mechanics will occur.

Present vehicle weight regulations are obsolete in the Gambia and are not enforced except on the Trans-Gambian highway. The Government is preparing a vehicle weight regulation law based on axle load limits. To help enforce this new law, the project provides a weighing bridge to be installed on the southern trunk road (Banjul-Brikama).

The IBRD-EEC project will provide technical assistance for a total of 12 person-years. The technical assistance will help the following branches and units of PWD: the Engineering Branch to prepare, schedule, coordinate, supervise and evaluate the road maintenance operations (a team leader for 4 years); the Mechanical

Branch to facilitate rehabilitation and major repair of road maintenance equipment prior to the opening of the new Central Workshop (a master mechanic for 2 years); the Field Divisions to set up a cost and performance accounting system (an accounting specialist for 2 years); the routine and periodic maintenance units (a) to launch the operations, resolving organizational, supply and scheduling problems, providing on-the-job training of personnel in specific tasks and assuring an acceptable production rate for the units (a road foreman for 2 years), and (b) to set up and manage a mobile workshop and to train a senior mechanic counterpart and two junior mechanics in equipment maintenance (a senior mechanic for 2 years). The senior and master mechanics are scheduled to be phased-out approximately six months after the scheduled arrival of the AID financed long-term advisors. At the end of the four-year program, Gambians are expected to manage all field operations.

The Mechanical Engineering Branch critically lacks engineering staff. The project provides a scholarship for a Gambian student in mechanical engineering for studies abroad to fill this gap. The proposed project also includes U.S. $100,000 as a reimbursement for the Project Preparation Facility used to finance a road maintenance study.

A preinvestment study will prepare the second phase of the road maintenance program, which would complement the proposed project. The follow-up study will be executed by consultants and will address the periodic maintenance needs of the paved roads and the expanded road network under PWD's responsibility. In the course of project implementation, the technical assistance team will acquire the necessary experience to help prepare this study and will be expected to contribute to it.

In view of the lack of good aggregates in the country, the GOTG's ambitious construction program for paved roads and their appropriate maintenance may face serious difficulties. As the surface deposits of cockle shells are being exhausted, a geotechnical exploration of underground deposits of the least costly aggregate for the Gambia is of high priority. If results of the exploration are negative, the consultants should recommend feasible alternatives. The proposed project will provide financing for this study.

Project Cost and Financing

The total cost of the proposed project, net of taxes, is estimated at U.S. $6.7 million of which U.S. $6.0 million is foreign cost (90%) and U.S. $0.7 million (10%) is local costs. The cost estimates are given on the following table. The Government will exempt the proposed project from taxes and duties.

IBRD-EEC Project Capital Costs
(January 1979 Prices Net of Taxes)

	US$ Thousands		
	Local	Foreign	Total
Equipment, Spare Parts and Weighing Bridge	10	2,171	2,181
Operating Costs for Backlog Maintenance of Laterite Roads	186	968	1,154
Technical Assistance	228	911	1,139
Scholarship	-	46	46
Reimbursement of PPF	-	100	100
Follow-up Road Maintenance Study	45	226	271
Aggregate Study	57	339	396
BASE COST	526	4,761	5,287
Price Contingencies	138	863	1,001
Physical Contingencies	53	366	419
TOTAL	717	5,990	6,707

The capital cost of the proposed project will be jointly financed by an IDA credit of US$ 5.0 million, and US $1.7 million from the EEC Special Action Fund.

The Association will finance 80% of foreign costs (US$4.8 million) and about 28% of local costs (US$0.2 million). The EEC will finance the remaining foreign costs and local capital costs. The GOTG will be responsible for recurring costs of Dl.140,000 (US $ 456,000) for operating the maintenance program.

Project Implementation

PWD will be responsible for executing the proposed project and will be assisted by consultants in planning, scheduling, and supervising the maintenance works and in improving the workshop operations. The consultants' team leader will help monitor and coordinate the road maintenance operations from PWD headquarters, while other technical experts will work alternately with the different field units for the routine and periodic road maintenance operations. The accounting specialist will work with the three divisions to set up a cost and performance accounting system to monitor the execution of the works.

Routine and backlog periodic maintenance works will be executed by force account; personnel will be selected from PWD's permanent and temporary workers. Consultants will assist in reorganizing the field units. The vehicles and equipment from the Central Pool and new equipment procured under this project will be assigned to the field divisions carrying out the maintenance works. Similarly, drivers and operators will also be assigned to the division where they will work during project execution. The chief executive engineer will rotate the mechanized units among the three divisions to ensure that the routine and backlog periodic maintenance programs are carried out according to the timetable.

The mobile workshop procured under the project will be assigned to the unit carrying out the backlog periodic maintenance of laterite roads. Three mechanics will be selected from the Central Workshop, with the approval of the Chief Mechanical Engineer, to be trained by the expatriate senior mechanic. The senior mechanic will set up and organize the operation of the mobile workshop. The Central Workshop will continue to perform all major equipment maintenance and repair works. After proper service in the workshop, equipment should be promptly returned to their units in the field.

The consultants will assist in working out detailed routine and periodic maintenance programs during the first year of project execution. These programs will present a timetable and specific measurable goals to permit monitoring the program and the improvements in the performance of the field maintenance units. The conslutant will also assist the Government in procurement matters and will prepare a project completion report.

The project will take four years to complete, from October 1, 1979 to September 30, 1983. The first year is a preparatory year (equipment with spare parts to be delivered, detailed program to be prepared, staff to be trained, etc.); the actual field work will start on October 1, 1980. The timing of various activities in the project is shown in Figure 15-1 on the following page.

FIGURE 15-1
THE GAMBIA
FIRST HIGHWAY PROJECT
PROJECT IMPLEMENTATION SCHEDULE
(CALENDAR YEARS)

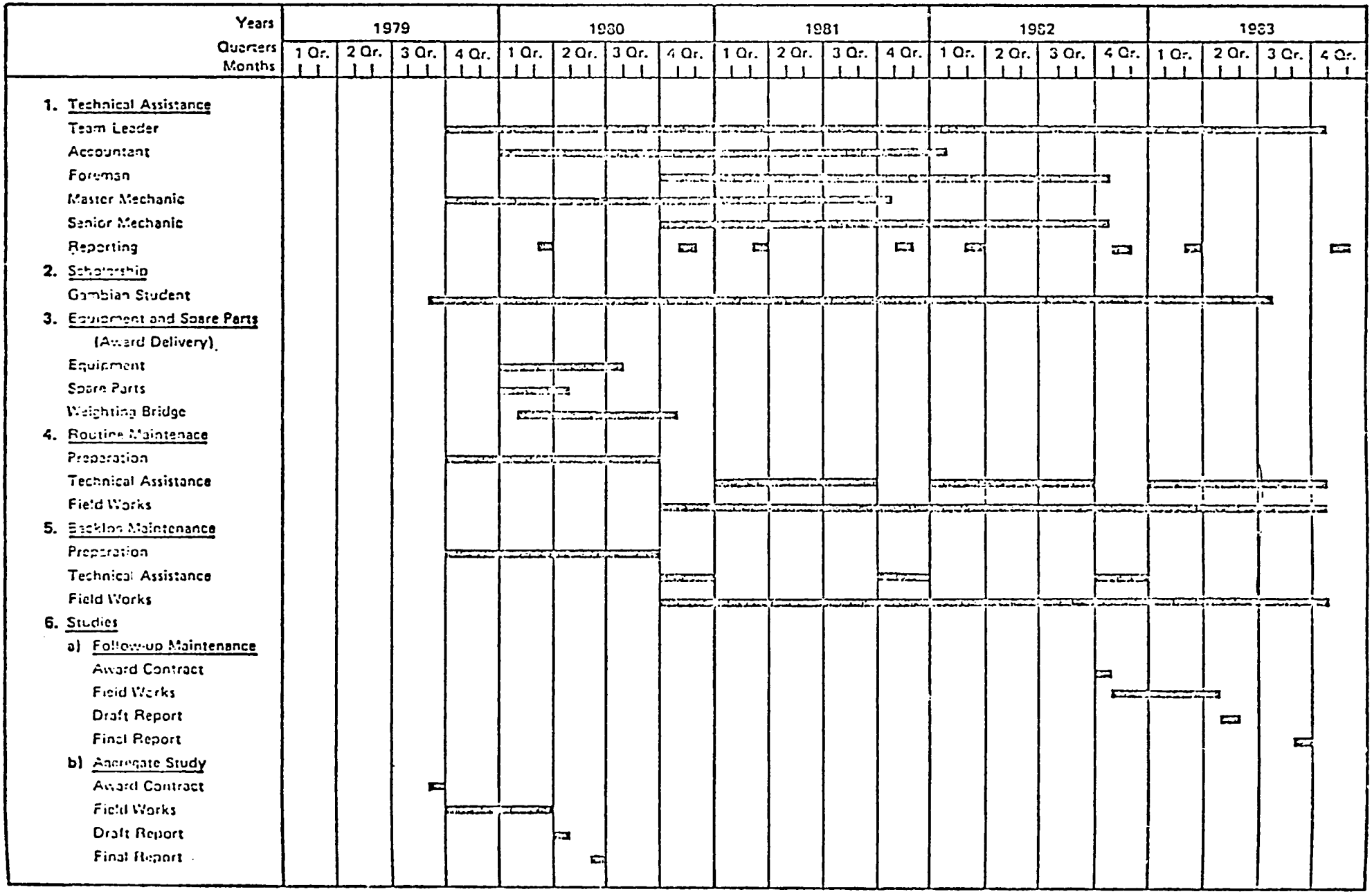


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FIGURE 15-2

LOCATION OF PROPOSED MAINTENANCE PROGRAM

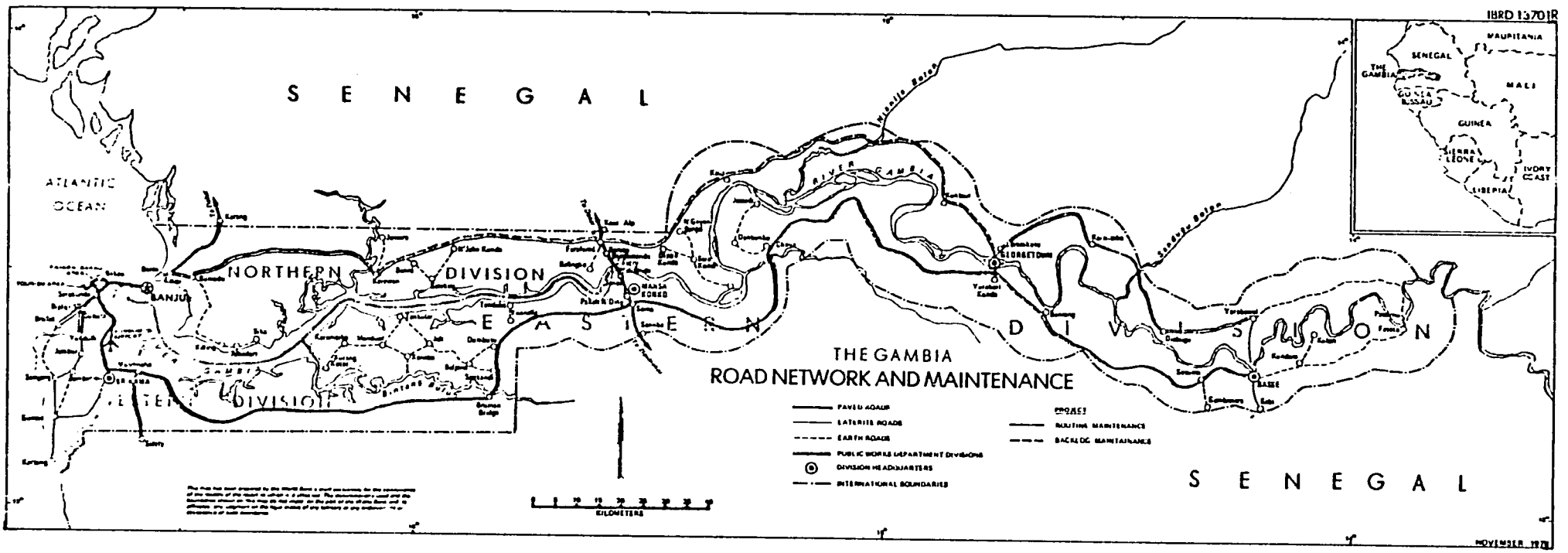

Table 15-1

Annex 15

Tentative List of Equipment to be Purchased for IBRD-EEC Project (January 1979 prices)

Item		Quantity	US$ CIF Unit Price Banjul	US$ Total
1.	Bulldozer	1	158,200	158,200
2.	Grader	4	86,500	346,000
3.	Wheel Loader	1	82,500	82,500
4.	Water Tank Truck	2	33,900	67,800
5.	Fuel Tank Truck	2	37,300	74,600
6.	Compactor	1	67,800	67,800
7.	Dump Truck (7 T.)	8	36,170	289,300
8.	Truck (6 T.)	11	31,650	348,200
9.	Landrover	1	15,800	15,800
10.	Mobile Workshop	1	84,800	84,800
11.	Electric Generator	1	5,600	5,600
12.	Air Compressor	1	13,500	13,500
13.	Water Pump (6 in.)	1	6,800	6,800
14.	Water Pump (2 in.)	1	2,250	2,250
15.	Asphalt Heater	1	56,500	56,500
16.	Asphalt Sprayer	1	2,250	2,250
17.	Hand Tools	-	63,300	63,300
18.	Weighing Bridge	1	123,000	123,000
19.	Low Bed Trailer	1	154,000	154,000
20.	Spare Parts (I)	-	--	51,000
21.	Spare Parts (II)	-	--	168,000
			Subtotal	2,181,200
			Price Contingency (10%)	218,120
			TOTAL	2,339,320

Note: Spare Parts (I) will be used to rehabilitate existing 8 trucks and will provide some stock (total procurement is 20% of replacement value of the 8 trucks)

Spare Parts (II) will be used to create an initial stock for the new equipment from items 1 to 17 (procurement is 10% of the replacement value)

ANNEX 16

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ANNEX 17

Project Design Team

1.	PP Design Coordinator	P. Cook, Louis Berger International
2.	Construction Engineer	R. Dudley, REDSO/WA
3.	Equipment Maintenance/ Training Specialist	R. Brumwell, Louis Berger International
4.	Transport Economist	R. Colin, Louis Berger International
5.	Sociologist	C. Cook, Louis Berger International
6.	Procurement Specialist	H. Garmany, REDSO/WA