

A.I.D. EVALUATION SUMMARY - PART I

1. BEFORE FILLING OUT THIS FORM, READ THE ATTACHED INSTRUCTIONS.
2. USE LETTER QUALITY TYPE, NOT "DOT MATRIX" TYPE.

IDENTIFICATION DATA

A. Reporting A.I.D. Unit: Mission or AID/W Office <u>AEE/USAID/JAKARTA</u> (ES# _____)	B. Was Evaluation Scheduled in Current FY Annual Evaluation Plan? Ad Hoc <input type="checkbox"/> Yes <input type="checkbox"/> Slipped <input checked="" type="checkbox"/> Evaluation Plan Submission Date: FY <u>92</u> Q <u>1st</u>	C. Evaluation Timing <input type="checkbox"/> Interim <input checked="" type="checkbox"/> Final <input type="checkbox"/> Ad Hoc <input type="checkbox"/> Other <input type="checkbox"/>
D. Activity or Activities Evaluated (List the following information for project(s) or program(s) evaluated: if not applicable, list title and date of the evaluation report.)		

Project No.	Project/Program Title	First PROAG or Equivalent (FY)	Most Recent PACD (MO/Yr)	Planned LOP Cost (000)	Amount Obligated to Date (000)
497-0353	Rural Roads Maintenance Systems	87	8/95	\$55,000	\$39,720

ACTIONS

E. Action Decisions Approved By Mission or AID/W Office Director	Name of Officer Responsible for Action	Date Action to be Completed
<p style="text-align: center;">Action(s) Required</p> <p>The actions listed below correspond to the recommendations listed in the "Summary" section of this form.</p> <ol style="list-style-type: none"> 1. The paradigm shift has been adopted, and will be implemented throughout the remainder of the project. This shift will be reflected in: a) Project Paper Supplement, and b) The extension of the TA contract. 2. The FY93-4 road rehabilitation program, which was approved prior to the evaluation will be executed, but in accordance with the Evaluation recommendation, there will be no FY95 program, and no new heavy equipment purchases are authorized. 3. a. The GOI has agreed to "privatize" the use of its heavy road equipment by organizing and empowering kabupatens to rent it to private contractors. USAID is providing the technical assistance and training in order to undertake this effectively. 	Sahanaya/ Nakatsuma Sahanaya/ Nakatsuma Sahanaya/ Nakatsuma	a. 2nd quarter, CY94; b. 2nd quarter, CY94 Action taken a. Actions taken Progress Ongoing;
	(Attach extra sheet	if necessary)

APPROVALS

F. Date Of Mission Or AID/W Office Review of Evaluation: _____ (Month) _____ (Day) _____ (Year)				
G. Approvals of Evaluation Summary And Action Decisions:				
Name (Typed)	Project/Program Officer	Representative of Borrower/Grantee	Evaluation Officer	Mission or AID/W Office Director
Signature	<u>Aifreci Nakatsuma</u>	<u>Drs. S.K. Mangiri</u>	<u>Cecily Mango</u>	<u>Charles F. Weden</u>
Date	<u>3/24/94</u>	<u>3/17/94</u>	<u>3/30/94</u>	<u>7/25/94</u>

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ACTIONS

E. Action Decisions Approved By Mission or AID/W Office Director	Name of Officer Responsible for Action	Date Action to be Completed
<p style="text-align: center;">Action(s) Required</p> <p>b. Local resource mobilization activities are now being emphasized in the roads rehabilitated under the Project. Attachment B describes new efforts to implement road user fees to contribute sustainably to the road rehabilitation, and additional activities to draw upon private resources to institutionalize the benefits of this Project will be accelerated under the FY94-95 program.</p> <p>4. USAID has examined the possible need for applying direct funding to performance of maintenance, but has decided not to undertake this activity for the following reasons: a) This activity will not be effective in consolidating the gains made under the Project; b) The World Bank program has been, and will continue to provide this type of incentive, thereby achieving the desired effect without USAID support; c) RRMS neither has sufficient time or financial resources to undertake this activity effectively.</p> <p>5. USAID has decided to terminate this Project on its original PACD due mainly to AID and USAID/Indonesia strategic reasons, and because of the lack of financial resources to continue the Project further.</p> <p>Until the end of the Project, the following activities will be undertaken to tighten the monitoring and evaluation of implementation in accordance with the evaluation and recommendations in the RIG Audit (see Attachment C).</p> <p>a. A contractor will revise Project Monitoring Plan.</p> <p>b. New guidance and instructions will be issued to TA contractor concerning the preparation and content of annual work plans and quarterly reports.</p> <p>c. GOI will submit annual commodity reports detailing the location, condition and use of USAID-financed vehicles and major equipment. USAID will make an end-use check on the commodities.</p> <p>d. USAID will review and verify annual non-expendable property reports, and will make an end-use check.</p> <p>6. Mission has initiated, and will continue to coordinate with the World Bank Kabupaten Roads V Program to assure maximum benefit to Indonesia.</p>	<p>Sahanaya/ Nakatsuma</p> <p>USAID/Indonesia</p> <p>a.Sahanaya/ Nakatsuma; b.Sahanaya/ Nakatsuma; c.Clark (Project Certification Eng.) Sahanaya/ Nakatsuma; d.Clark/ Sahanaya/ Nakatsuma.</p> <p>Sahanaya/ Nakatsuma/Stoner (Office Chief)/ Weden (Mission Director)</p>	<p>b. Actions taken/ Progress Ongoing;</p> <p>Action taken</p> <p>Action Taken.</p> <p>a. 2nd quarter CY94; b. 2nd quarter CY94; c. 2nd quarter CY94; d. 3rd quarter CY94.</p> <p>Ongoing</p>

ABSTRACT

H. Evaluation Abstract (Do not exceed the space provided)

The project was designed to assist the Government (GOI) to create and institutionalize sustainable rural roads maintenance systems (RRMS) in nine districts. The purposes of this (belated) mid-term evaluation are: to determine project accomplishments and institutionalization to date plus potential sustainability; advise whether the project should be terminated, implemented to the current PACD, or extended, and recommend a management structure for the remainder of the project life.

The major findings, conclusions and lessons learned are:

- Project design was sound except that its road rehabilitation component diverted attention away from the maintenance, institutionalization and sustainability aspects.
- Project accomplishments include: development of systems and manuals covering most proposed project activities; provision of technical assistance (TA) and some training, furnishing of equipment and road rehabilitation.
- Project shortfalls include: limited creation of maintenance awareness; slow implementation; questionable institutionalization and sustainability; inadequate quality and amount of training; and insufficient road rehabilitation.
- Although the project has so far fallen well short its potential, it has laid the foundations for future success.

The principal recommendations of the evaluation team are:

1. A "Paradigm Shift" covering implementation philosophy and consultant organization would maximize sustainability.
2. Further rehabilitation activities and equipment purchases other than those already committed should not be authorized.
3. Push for further privatization of maintenance operators.
4. USAID should examine the possible need for applying some direct funding to the performance of maintenance.
5. Contingent upon satisfactory resolution of the above questions, USAID should extend the PACD until August 1996.
6. Coordination with other donors must be given high priority.

The primary lessons learned are:

- Institutional development projects should be implemented by organizations specializing in that subject.
- Such projects need early and frequent evaluations.

COSTS

I. Evaluation Costs

1. Evaluation Team		Contract Number OR	Contract Cost OR	Source of Funds
Name	Affiliation	TDY Person Days	TDY Cost (U.S. \$)	
Paul N. Wenger	Devres, Inc.	Total of 142 person days	\$86,717	AID/Grant
Robert Rafloski	Devres, Inc.			
Gerald Scott	Devres, Inc.			
Arie Kusumadewa	Devres, Inc.			
2. Mission/Office Professional Staff		3. Borrower/Grantee Professional		
Person-Days (Estimate) <u>20 person days</u>		Staff Person-Days (Estimate) <u>40 person days</u>		

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A.I.D. EVALUATION SUMMARY - PART II

S U M M A R Y

J. Summary of Evaluation Findings, Conclusions and Recommendations (Try not to exceed the three (3) pages provided)

Address the following items:

- | | |
|--|-----------------------------|
| • Purpose of evaluation and methodology used | • Principal recommendations |
| • Purpose of activity(ies) evaluated | • Lessons learned |
| • Findings and conclusions (relate to questions) | |

Mission or Office: AEE/USAID/Jakarta	Date This Summary Prepared: 03/24/94	Title And Date Of Full Evaluation Report: Rural Roads Maintenance Systems Mid-Term Evaluation January 1994
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SUMMARY

A. Purpose of the Project:

The purpose of the project was to aid the Government of Indonesia (GOI), through the Ministry of Home Affairs (BANGDA), to create and institutionalize sustainable rural roads maintenance systems (RRMS) in nine districts (kabupatens) of the Outer Islands of the archipelago. Although highways in the national and provincial networks were being reasonably well maintained by the Highway Department (Bina Marga), rural roads falling under district jurisdiction were receiving little or no maintenance, and were consequently deteriorating rapidly.

The project was designed to work with BANGDA in furtherance of USAID policy of support for the GOI thrust toward the decentralization of authority, as well as to help meet the requirement for institutionalization of district road maintenance coupled with sustainability of the institutions and programs created.

B. Purpose of the Evaluation:

The purpose of this (belated) mid-term evaluation are to: determine the accomplishments of the project to date as potential building blocks for future fulfillment of the project purpose; evaluate its shortcomings and asses the degree of institutionalization as an indicator of potential sustainability; advise as to whether the project should be terminated, implemented to the current PACD, or extended; and recommend a management structure for the remainder of the project life. The evaluation also deals with some of the issues raised in a recent Regional Inspector General (RIU) audit.

The evaluation was carried out by a team of independent consultants through: extensive document reviews; continuous discussions with the technical consultants on the RRMS project; a program of widespread interviews with GOI officials at both national and local levels, plus staffers and consultants for the international agencies operating in the roads sector; and field examinations by the entire team of representative sites of project activities.

C. Findings and Conclusions:

1. Project Accomplishments:

Project accomplishments have included development and partial testing of systems and manuals covering much of the range of project activities: equipment maintenance systems; highway maintenance systems; road link selection procedures; tendering and contracting procedures; and road work certification procedures. Limited amounts of road rehabilitation, workshop construction and training have also taken place.

2. Project Shortfalls:

The major flaw in an otherwise sound project design was that road rehabilitation was included as a "necessary" activity. It was seen as no more than a means toward the end of creating a supply of maintainable roads, but it had the unintended consequence of diverting attention away from maintenance, institutionalization and sustainability, a flaw greatly exacerbated in the course of project implementation.

Shortfalls in project implementation include: maintenance awareness is still low in both BANGDA and the districts and little is performed, while rehabilitation remains dominant; implementation has been sluggish; institutionalization and sustainability are questionable; there has been a lack of communication among the parties; training has been deficient; GOI budgetary problems have not been adequately addressed; and other donor coordination has been insufficient. Rehabilitation will only cover 1/3 of the kilometers projected.

3. Resolution of Shortfalls:

Although the project has so far fallen short of its potential, the evaluation team recognizes that any institution development program is going to be slow in implementation and replete with problems, and believes that with the proper future-oriented USAID management decisions, RRMS can still be a substantial success.

D. Principal Recommendations:

1. USAID should enter into a "Paradigm Shift" in project implementation management, through a return to the original institutionalization/sustainability theme of the project and should reinforce this shift by employing a consultant with the type of expertise needed and, in the process, making it clear to the GOI that institutionalization/sustainability must be the prime focus of the project.
2. Further rehabilitation activities and equipment purchases other than those already committed should not be authorized; those that are approved should be monitored with greater precision than in the past.
3. USAID should push for further privatization of maintenance operations and equipment: the districts do not have either the regularized funding or the trained personnel to enable them to maintain equipment fleets or carry out large force account operations.
4. USAID should examine the possible need for applying some direct funding to performance of maintenance to demonstrate in action its essentiality for a viable road network.
5. Given the pace of progress in Indonesia, continuation to the present PACD of August, 1995 will not provide enough time; contingent upon resolution of the above questions, USAID should extend the PACD until August, 1996 to permit adequate maintenance system institutionalization and sustainability.
6. Coordination with other donors must be given high priority and established on a more formalized basis.

E. Lessons Learned:

- The potential value of the systems and manuals produced by the project is substantial, but could be lost without an adequate training program to refine and disseminate them.
- Roads already rehabilitated under the project are at risk of deterioration and the districts' understanding of the importance of maintenance is in danger of being lost by the incomplete status of project activities.
- Institutional development projects are best implemented by organizations specializing in that subject, rather than by technically oriented firms.
- Such projects also need earlier and more frequent external evaluations than projects producing a relatively easily measured physical output.
- Road rehabilitation and equipment purchases are of less value to maintenance system institutionalization and sustainability than training and institutional support.
- Adequate data is essential for operational efficiency and economic justifiability, but has been lacking.
- Coordination with other donors is essential to insure optimum benefits to donors and host country alike.

- The use of Project Management Units (PMUs) is sound in light of manpower limitations imposed upon USAIDs; one would have done much to relieve the burden of implementation, had it been instituted at the time of project authorization.



ATTACHMENTS

K. Attachments (List attachments submitted with this Evaluation Summary; always attach copy of full evaluation report, even if one was submitted earlier; attach studies, surveys, etc., from "on-going" evaluation, if relevant to the evaluation report.)

- A. RRMS Mid-Term Evaluation
- B. Project Manager Field Trip Report
- C. USAID Response to RIG Audit

COMMENTS

L. Comments By Mission, AID/W Office and Borrower/Grantee On Full Report



XD-ARL-803

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INDONESIA
RURAL ROADS MAINTENANCE SYSTEMS
MID-TERM EVALUATION
(Project No. 497-0353)

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USAID/Indonesia

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December 1993

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ACKNOWLEDGEMENTS

So many people did so much to help the team in its work that it might seem unfair to single out a few while omitting others. However, it would also be unfair to ignore the particular efforts of those who devoted truly major parts of their time assisting in the field work and studies that made possible whatever success this evaluation may lay claim to attaining.

Therefore, we would like to give our special thanks to:

Alfred Nakatsuma
Wouter Sahanaja
Fred Pollock
and Rukmini
of the USAID Staff;

Charles Clark
and Edwards McKinnen
USAID Consultants;

and

Jerry Becker
Tom Raquer
Herb Stewart
and Ida Syukur
of the STV/Lyon Staff.

INDONESIA RURAL ROADS MAINTENANCE SYSTEMS PROJECT

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LIST OF ANNEXES

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1	Economic and Financial Factors
2	Plant and Equipment Hire Scheme
3	Creation of a PMAU
4	Management Information System
5	International Road Federation
6	Sustainability Analysis
7	Local Resource Mobilization
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10	List of People Contacted
11	Glossary of Terms and Acronyms
12	Scope of Work
13	Team Composition and Methodology
14	Original Executive Summary

EXECUTIVE SUMMARY and PRINCIPAL RECOMMENDATIONS

and

PROJECT EVALUATION SUMMARY

ABSTRACT

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- Such projects need early and frequent evaluations.

SUMMARY

A. Purpose of the Project:

The purpose of the project was to aid the Government of Indonesia (GOI), through the Ministry of Home Affairs (BANGDA), to create and institutionalize sustainable rural roads maintenance systems (RRMS) in nine districts (**kabupatens**) of the Outer Islands of the archipelago. Although highways in the national and provincial networks were being reasonably well maintained by the Highway Department (**Bina Marga**), rural roads falling under district jurisdiction were receiving little or no maintenance, and were consequently deteriorating rapidly.

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Shortfalls in project implementation include: maintenance awareness is still low in both BANGDA and the districts and little is performed, while rehabilitation remains dominant; implementation has been sluggish; institutionalization and sustainability are questionable; there has been a lack of communication among the parties; training has been deficient; GOI budgetary problems have not been adequately addressed; and other donor coordination has been insufficient. Rehabilitation will only cover 1/3 of the kilometers projected.

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D. Principal Recommendations:

USAID should enter into a "Paradigm Shift" in project implementation management, through a return to the original institutionalization/sustainability theme of the project and should reinforce this shift by employing a consultant with the type of expertise needed and, in the process, making it clear to the GOI that institutionalization/sustainability must be the prime focus of the project.

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- Coordination with other donors must be given high priority and established on a more formalized basis.

E. Lessons Learned:

- The potential value of the systems and manuals produced by the project is substantial, but could be lost without an adequate training program to refine and disseminate them.
- Roads already rehabilitated under the project are at risk of deterioration and the districts' understanding of the importance of maintenance is in danger of being lost by the incomplete status of project activities.
- Institutional development projects are best implemented by organizations specializing in that subject, rather than by technically oriented firms.
- Such projects also need earlier and more frequent external evaluations than projects producing a relatively easily measured physical output.
- Road rehabilitation and equipment purchases are of less value to maintenance system institutionalization and sustainability than training and institutional support.

- Adequate data is essential for operational efficiency and economic justifiability, but has been lacking.
- Coordination with other donors is essential to insure optimum benefits to donors and host country alike,
- The use of Project Management Units (PMUs) is sound in light of manpower limitations imposed upon USAIDs; one would have done much to relieve the burden of implementation, had it been instituted at the time of project authorization.

I. BACKGROUND:

The INDONESIA Rural Roads Maintenance Systems (RRMS) Project (497-0353) was authorized in June 1987, and the Grant and Loan Agreements signed in August 1987. The Project Assistance Completion Date (PACD) is August 1995, with an eight year Life of Project (LOP). The project deals exclusively with roads at the kabupaten or district level.

The project conceptualization and design as set forth in the Project Paper (PP) could be characterized as generally sound, with recognition of: the Government of Indonesia (GOI) thrust toward decentralization of the administration of governmental functions down to and including the kabupatens; the essentiality of having effective programs of routine and periodic maintenance to enable roads to serve their function effectively throughout their normal service life; the need for institutionalization of road maintenance; the desirability of privatization of a range of construction and maintenance activities; and the critical importance of sustainability when USAID funding is terminated and the consultant has departed.

The major flaw of the PP was a substantial underestimation of the condition, number and length of "maintainable" roads in existing kabupaten networks; it estimated only 391 km. as against a GOI figure of 2,213. As a consequence, rehabilitation of deteriorated roads was included as a major activity in the project design. It was seen as only a means toward the end of creating maintainable roads, rather than as an end in itself, but it led the project into the trap of diverting the attention of all parties from the long term and barely visible benefits of maintenance and the even longer term and far less visible benefits of institutionalization and sustainability, to the immediate and dramatic results of rehabilitation. (It was also tacitly accepted as a "sweetener" to gain the support of people attracted by rehabilitation.) Once this fixation had become doctrine, the rehabilitation syndrome persisted as long as three years later, when the revised USAID strategy continued to include a major rehabilitation effort, even though reduced from 1,600 km. to a range of 1,000 - 1,200 km.

Another analytical shortcoming was failure to take into account the vagaries of the Indonesian budgeting system, which frequently leaves a several month period without financing for road work (or any other government-financed activities).

The PP has likewise been faulted for making "best case" assumptions on such subjects as the cost of road rehabilitation, the adequacy of indigenous contracting procedures, and the speed with which activities can actually be implemented under Indonesian conditions, but in these areas it remained within the bounds of what could have been realized.

The subject of project implementation is considerably more complex, and will be discussed at length below.

II. PURPOSES OF EVALUATION:

The overall purposes of the current evaluation are to:

- determine the accomplishments of RRMS to date as potential building blocks for future fulfillment and indicators of areas of success in such endeavors;
- assess the institutionalization of RRMS management and maintenance systems as indicators of potential project sustainability;
- document the relationship between the project's design objectives and actual and prospective achievements;
- accordingly, advise whether the project should be terminated as soon as feasible, implemented up to the current PACD, or extended and, if so, for how long;
- suggest areas of forward planning for the remainder of the project activities; and
- recommend a management structure - including the nature of prospective consulting services - for the remainder of the project.

Specific tasks set out in the SOW are to evaluate:

- the technical soundness of methods proposed for realizing project targets, establishing maintenance regimes, and choosing between force account and contract maintenance;
- the institutional effect of project activities on GOI organizational structures, incentives, decision points, technical capacities, training, and consideration of road user preferences;
- the effect of Special Studies under the project on critical policy issues;
- the economic and financial factors affecting development of maintenance systems under the project and the sustainability of such systems;
- the effect of the project on the efficiency and transparency of road rehabilitation and maintenance contracting;

- the degree and effectiveness of donor coordination on road maintenance procedures and activities;
- the effectiveness and efficiency of project management on the part of the different organizations involved; and
- the effects of project administration and activities on Indonesian women.

The SOW placed particular emphasis on the cross-cutting criteria: relevance, efficiency, effectiveness, impact, and sustainability as critical subjects for this evaluation. In addition to being included in the body of the evaluation, summary responses to the questions raised are included in Annex 12.

III. TEAM COMPOSITION AND METHODOLOGY OF EVALUATION:

A. Team Composition:

Institutional/Sustainability Analyst;
Transportation Economist;
Civil Engineer;
Institutional Development Specialist/Team Leader.

B. Evaluation Methodology:

- Perusal of project-related documents;
- Meetings with:
 - USAID officials;
 - GOI officials and staff;
 - Other donor officials/consultants;
 - STV/Lyon personnel;
 - Contractors and other private sector individuals.
- Field trip examination of roads, workshops, etc.
- Discussions and vetting of drafts among team members.

Additional details on team composition and the methodology, activities, and problems encountered in the course of the evaluation are covered in Annex 13.

IV. PROJECT ACCOMPLISHMENTS:

The list of project accomplishments is substantial in and of itself and even more impressive as a set of foundation stones for future progress.

A. Direct Accomplishments:

Among the most important of the direct project accomplishments has been the preparation - but as yet limited implementation - of the five systems called for in the project design, with their nominal systems manuals, covering much of the range of project activities. These are:

- Equipment maintenance system (EMS);
- Highway maintenance system (HMMS);
- Road links selection procedures;
- Tendering and contracting procedures through the Two-Envelope System of Tendering (TEST); and
- Road work certification procedures.

The EMS and HMMS manuals have been issued in their "as written" form and should have been field tested and revised accordingly, as discussed in the Technical Analysis, below. However, they have already been adopted beyond the project area in 145 kabupatens each, and will receive testing and refinement there. Field testing and institutionalization of feedback loops for other systems are scheduled to be undertaken by the consultant under its recent contract extension.

Training activities under the project have not lived up to expectations, and a separate training contract has been entered into by USAID with an 8(a) firm. Nevertheless there have been some solid training accomplishments under the project:

- Most successful have been the procurement and equipment maintenance training programs, which are being extended to 26 kabupatens in the two project areas.
- Despite the incomplete status of its manual, Quality Control training has also been successfully initiated.

A substantial accomplishment is the marked improvement made by the project in tendering procedures for road construction and maintenance contracts. A great deal of Consultant and USAID effort - including the making of a demonstration film - went into the development and adoption by the JOI of TEST. The major benefits of this system in enhancing the transparency, honesty and efficiency of the contracting process are expected to be incorporated in the overall Indonesian public contract tendering system embodied in the appropriate directive, (KPRES 29), even though some of the procedural aspects of TEST may be modified to conform to IBRD and ADB norms and to make the overall process more "Indonesian".

Finally, the project has produced a number of excellent Special Studies covering important subject areas:

- Contractor Performance;
- District Equipment Policy;
- Local Resource Mobilization.

B. Indirect Accomplishments:

1. Encouragement of Popular Participation:

Both BANGDA pusat and kabupaten officials spoke favorably about the "bottom up" process utilized by the bupatis in selecting road links for rehabilitation, describing in detail the way citizens' groups spoke up in desa meetings about their need for roads, how these reports were taken up to the kecamatan level and finally to the regional BAPPEDAs before going to the bupati for decision. This same grassroots approach is expected to be used when similar decisions come to be made on road maintenance, since once the people begin to understand the importance not only of building roads but of keeping them operative, the same democratic forces will be operative. Moreover, renewed emphasis on institutionalization under the proposed paradigm shift will reinforce the ability of the people to influence their local governments.

As with any exercise in grassroots democracy, this process can sometimes lead to short-sighted and technically or economically unsound decisions; the remedy, however, is not to abandon the bottom up concept, but to extend educational programs so that all levels of society may understand. The training film to be made on maintenance awareness has the potential to help remedy this situation if well made and widely circulated.

2. Development of the Private Sector:

Although the more stringent equipment and expertise requirements of road rehabilitation have inclined kabupatens in the past to rely on either force account or the larger private contractors, the more modest demands of a properly designed system of routine (if not periodic) maintenance, coupled with the greater overall effort required as more and more lengths of road become eligible for and receive such maintenance, should open up additional opportunities for small and medium contractors. This will be coupled with the extension of project-funded training to the private contractor sector. A further major benefit of expanding opportunities for numerous small contractors will be the bringing of additional transparency to the contracting system.

V. TECHNICAL ANALYSIS

A. The RRMS Road Network:

The nine project kabupatens contain more than 5000 km of roads.

Rural Road Networks

South Sulawesi		NTT	
<u>Kabupaten:</u>			
Pinrang	389 km	Kupang	756 km
Sidrap	638 km	Belu	494 km
Sinjai	348 km		
Bone	1099 km		
Bulukumba	786 km		
Jenepono	594 km		
Takalar	<u>214 km</u>		
	4068 km		<u>1350 km</u>
TOTAL:		5418 km	

B. Planning and Design Criteria:

1. Construction:

It is evident from past experience that design determines the construction requirements of a road and influences its maintenance requirements once constructed. Road standards in Indonesia have been established and improved over the past five to ten years. However, they have been only selectively applied, usually under donor-funded projects, and districts that do not receive donor assistance do not use them. The design problem presented in the context of the kabupatens is that the majority of their roads were constructed either before adequate standards were established or under road programs (Padat Karya, Transmigration, etc.) which used lower standards.

Experience before the start up of RRMS indicates that the most serious design shortcomings are inadequate provisions for drainage, poor vertical alignments and inadequate recognition of pavement structure. Road improvements were frequently undertaken without modification of either horizontal or vertical alignment. There is a pronounced tendency to focus on the running surface to the exclusion of substructure, shoulders, ditches, culverts and other drainage features. Road construction was frequently undermined by the lack of subsoil drainage through natural shoulders. Finally, design rarely took into account the basic criteria of type and speed of projected traffic, pavement thickness and type, physical conditions, etc. Thus road networks have frequently been underdesigned, reducing the road's serviceable life.

2. Maintenance:

One of the major difficulties encountered during the evaluation of the RRMS project was lack of a consistent set of maintenance definitions among GOI, USAID, and the Consultant's team. These inconsistencies stem partly from difficult communications between the Directorate General of Highways of the Ministry of Public Works and the districts, because the district administrations are under the Ministry of Home Affairs. The Project Management Unit attached to the MOHA and MOPW has now defined four broad groups of activity (Technical Guidelines, Planning and Programming of Kabupaten Roads, July 1990):

- Maintenance Works on roads in "good/fair" condition;
- Major Works (new construction, upgrading, rehabilitation) on roads in "poor/bad" condition;
- Holding Works on roads in "poor/bad" condition;
- Emergency Works on roads subject to unforeseen disasters.

Maintenance Works should be carried out on all identified roads in good/fair condition and should receive priority in budget allocation. They are intended to keep the road surface close to its original condition and are required to sustain a road over the full term of its intended design life. They consist mainly of low-cost annual routine works, costing in the range of Rp 0.5 - 2.0 million per km, and periodic resurfacing and drainage works with an expenditure ceiling of about Rp 20 - 25 million per km.

Major Works are intended to bring a road up to the minimum standard appropriate to the traffic expected to use it, usually involving major reconstruction of the pavement. They comprise either new construction, upgrading or rehabilitation, with a typical expenditure range of Rp 30 - 100 million per km and a design life of ten years.

Holding works are low-cost annual works intended to keep a road open to existing traffic or to prevent it from deteriorating irretrievably when major works are either not warranted by traffic levels or have to be deferred because of insufficient funds. They have a typical expenditure range of Rp 1.0 - 7.0 million per km. A portion of the budget should be reserved for holding works.

Emergency Works are those required urgently to re-open a road that has been recently closed to four-wheel vehicle traffic by a sudden interruption, such as a landslide or collapsed bridge. Emergency works cannot be budgeted for in advance, but a portion of the budget ought to be reserved for them.

C. Quality Control:

1. Prior Quality Control:

In the early stages of this project the concept of quality tended to be neglected at the kabupaten level. The generally poor to mediocre condition of those roads the team inspected during its field trip - all of them contracted and constructed before availability of the reformed RRMS procedures - indicated that the combination of TEST and the EMS and HMMS manuals, coupled with the notion that contract road works would undergo a more rigorous progressive inspection and acceptance process, could be expected to have significant influence on the quality and performance of the contractors' future work and scheduling.

2. Project-Designed Rural Road and Equipment Maintenance Manuals:

Among the major project accomplishments have been the preparation of the Equipment Maintenance System (EMS) and Highway Maintenance System (HMMS) manuals covering design and contracting procedures for rehabilitation, upgrading, construction and maintenance works on kabupaten roads and bridges. The manuals should prove highly beneficial to the GOI in stabilizing the quality and cost of those kabupaten road networks already under construction or in a planning stage. The testing, revising and implementation of these manuals should be coordinated closely with other funding agencies such as IBRD, OECF and ADB.

The broad objectives of these manuals are:

- to allow kabupaten staff to carry out their own surveys, analyses and evaluations, following systematic procedures, and leading to timely preparation of plans, specifications, estimates, and contract bidding documents to a consistent standard;
- to ensure that the utilization of local resources for the road works of rehabilitation, up-grading and construction is determined in a rational manner;
- to ensure that selection of priorities for major works are based on simple, rational economic criteria that accord donors and GOI agencies alike a reasonable degree of confidence that the proposed investments are appropriate;
- to set up a database of information about the road network monitoring and planning future road works based on condition inventories and traffic counts.

In order to permit effective utilization of the manuals, the RRMS training consultant should work closely with the general consultant to develop suitable training documents for the kabupatens. By the same token, the training consultant should link up the design curriculum

with close cooperation with the Universities at NTT and Sulsel. Cooperation, coordination and communication with the local Universities are crucial aspects of both institution building and sustainability, and should be a major part of the training consultant's approach.

Because the systems covered by these manuals are entering their operational phase - as distinguished from those that are still in process - they will be examined at greater length in Sections D. and E. below.

3. Project-Designed Two-Envelope System of Tendering (TEST):

Another of the primary accomplishments of RRMS to date has been the recent preparation and dissemination, through consultant presentations and a training film, of the Two-Envelope System of Tendering (TEST), designed to make the contracting procedures for road construction and maintenance more efficient and transparent. The GOI has indicated its acceptance of the TEST concept in a modified "Indonesian" form in its basic contracting procedures manual (KPRES 29).

4. Proposals for Improved Quality Control:

Noteworthy improvements in both road construction and maintenance quality over and above those that will flow from EMS and HMMS are also in the works. These improvements are expected to be phased into the nine project kabupatens - and eventually replicated elsewhere - as soon as the Consultant publishes adequately tested and revised versions of the proposed guidance manuals on Highway Construction Practices and Kabupaten Road Design. As with the EMS and HMMS manuals, the training consultant should develop a long term plan for introducing these improved techniques and methods through an integrated program of workshops, seminars and forums. Technological transfers should be strengthened by associating universities located in the project areas.

a. Highway Construction Practices:

The proposed manual on Highway Construction Practices will examine the matter of equipment-intensive versus labor-intensive construction methods. The review of kabupaten construction and maintenance methods used to date has shown that equipment based methods have progressively been used more for rural roads. Labor based methods are becoming less and less sought by the GOI. The desire to upgrade the quality of road construction naturally is accompanied by an increase in equipment based methods, to the detriment of such traditional labor based methods as Telford. Under suitable conditions, however, labor based rehabilitation of rural roads has been reported to be 15 percent cheaper than using equipment, with an even more critical 40 percent average saving in foreign exchange. In Kenya, the World Bank and ILO found that labor based force account construction was up to 40 to 50 percent cheaper than equipment based methods and 50 to 60 percent less in economic terms. The establishment of new design standards should take into account traditional methods that have demonstrated efficiency and economy.

b. Kabupaten Road Design Manual:

The idea of developing a highway design manual for the kabupaten level is highly justifiable and would effectively improve the quality and serviceability of future road works carried out by either force account or contract. Traditionally, the kabupatens have relied on Bina Marga design criteria and IBRD guidelines and standards, so if the Kabupaten Road Design Manual is to be useful in the field, close coordination with Bina Marga and IBRD will be required. Any improved designs must be properly documented and monitored over a number of years and continue to show merit years later. The number of years that RRMS would be operating under the proposed one-year extension should provide an adequate basis for comparative design analysis and appropriate cost data. The Kabupaten Road Design Manual was scheduled to be produced by the end of June 1993; however, this document was not made available to the Evaluation Team, and its completion is not expected for several months.

The maintainability of the proposed kabupaten road designs to be established in the manual must also take into consideration the technology levels of the district contractors and force account personnel. The design and planning engineers must face the fact that the majority of the existing kabupaten road system is not maintained. The result of this is that the road system quickly deteriorates from lack of maintenance. Roads that should last a decade with normal maintenance typically reach the point of no return in a few years and have to be totally reconstructed at full cost. To ensure the maintenance of a newly constructed road, a maintenance clause should be a part of the construction contract; it may increase the contract envelope 10 or 15 % but is well worth it based on the potential economies to be realized.

5. Road Transport Policy:

To facilitate the achievement of RRMS objectives in the future, more effort must be directed toward the issues of road transport policy, human resources development, funding and institutional development. A major shift from the previous project focus (road rehabilitation) needs to be initiated to benefit from the prior project investments. The kabupaten-based thrust of RRMS could play a major role in assisting the GOI in the decentralization process currently underway, thus contributing to both the spread of democratic processes and economic development.

A key component of road transport policy is the establishment and enforcement of reasonable limits on vehicle weights. Nothing destroys a road more effectively than badly overloaded vehicles: especially when the soil is soaked from flooding or rain.

6. Education and Training:

Education and training are major inputs in the development process of any sector, including the rural road design sector. In this respect, it is necessary to train the necessary manpower for the various activities that are required to prepare design and planning engineers. The structuring of courses at the training schools, and universities in the relevant provinces should reflect project demands in term of the relevance of the courses. The training component of the RRMS in the past did not seek to associate with the relative educational institutions of engineering to assure transfer of technologies and experience. In the long run this represents a paramount gap in the previous training approach. The use of the latest techniques in the training of personnel (for example: program learning manuals, videos and micro-computers) must also be accepted if competence in design, planning and contracting is to be achieved.

Following the basic modules described for road maintenance, a planning, programming and reporting system should be developed by the Training Consultant, with the collaboration of the basic systems consultant, for the Training Management System. This system can be divided into five phases or work modules which are interconnected by the task flow and system feedback: (i) skills assessment; (ii) training assessment; (iii) program development; (iv) training scheduling; and (v) training monitoring.

These phases are relatively self-explanatory. Briefly, the training planner matches an analysis of required skills to quality standards and then the work method and other requirements are established on the basis of established training standards.

The process continues with development of the training plan schedule and, finally, monitoring and evaluating the actual instruction. Unit costs for training are obtained in a matter similar to that used for road maintenance, but the process is somewhat simplified in the case of classroom training. On the job training is more complicated to cost; it should take into account a discount for productivity of the trainees.

7. Institutional Support:

The International Road Federation (IRF) is dedicated to the advancement of road transportation technologies worldwide. This organization assists national educational institutes and ministries of transport and public works in setting up ongoing educational, training and research programs especially suited to developing countries. Training programs funded by the World Bank and coordinated by the IRF are indicated in Annex 5. IRF maintenance awareness publications, videos and manuals are also available to member countries and can be tailored to local needs.

D. Highway Maintenance Management System (HMMS):

1. Need for System:

Field visits to NTT and Sulsel allowed the Evaluation Team to assess the degree of implementation of the proposed HMMS in the nine project kabupatens. The basic system manual and guidelines have been officially approved by BANGDA. At this time, however, no evidence of operational systems was observed at the kabupaten level. Previous training programs executed by the consultant have also shown little result in the field despite the fact that the simple models used have a proven track record in numerous developing countries. Consequently, training has been removed from consultant's responsibilities.

The HMMS Manual provides the outline of a system permitting maintenance needs to be identified simply and easily if applied at the kabupaten level. Although the GOI has made progress at national and provincial levels in the introduction of maintenance management, the kabupaten levels have only now began to realize the necessity of planned road maintenance.

2. Basic Components of the Proposed HMMS:

The system for road maintenance planning, programming, and reporting advocated by Consultant is basically composed of five phases of work modules. Each of these phases, in turn, can be considered a sub-system within the overall process: a. Condition Assessment; b. Work Assessment/Analysis; c. Work Planning; d. Work Scheduling; and d. Work Reporting.

The system will be discussed both as presented in the present Consultant's draft and as the evaluation team feels that draft should be modified in the course of testing and revision.

a. Condition Assessment:

Although this module is presented in consultant's system, it has been overly simplified, rendering the basic principals of inventory management inoperative. "Condition assessment" should consist of a systematic (annual) survey of road conditions by visual inspection in order to determine the extent of the road's deterioration and roughness. Roughness is the foremost aspect of condition affecting level of service to the user and the economic benefits to be derived from maintenance; it is preferable to tie it to a transferable physical scale, such as the International Roughness Index (IRI). It is also desirable to have a separate measure of surface distress, because this can indicate the potential for accelerated deterioration in the future. The rating scheme proposed by the consultant does not include precise identification and quantification of principal defects, and should be modified accordingly. This process requires the use of a "Road-Inspection Form" and "Damage Catalogue" which indicate the quantified condition of each segment of road. The Consultant's proposed condition rating system should be tied to identification and

quantification of the extent of damage to each road feature (percentage). This is then compared to the "Quality Standards" which define the threshold at which point certain maintenance activities should be carried out. This process also requires that Traffic Data for the road segment be provided and used to prepare projections for the rate of deterioration.

b. Work Assessment:

Following the annual road condition survey, the work assessment is based on preparation of a "Work Analysis" which outlines the method of work and amount of resources required to perform the work on the "Road Inspection Form". The quantification of the resources required is on the basis of standard scaling keyed to "Production Standard" includes: (i) man hours and crew size; (ii) nature and bill of quantities; and (iii) type, size and quantity of equipment.

A "Road Database" should be one of the priority components of the Management Information System currently being developed by consultant. This database should show the history of a particular road segment and provide a maintenance cycle for the road, based on road history, traffic projections and additional data as needed from the cost accounting and economic analysis sections. The basic requirements for building a computerized database are: (i) All information in the database must be accurately defined and coded. A data dictionary of terminology should clearly define the various management terms and data fields; (ii) The database maintenance responsibilities at the level of BANGDA and the kabupaten should be clearly specified; (iii) The database management used for compiling the data bank and for accessing and processing the data must be selected on the criteria of speed of access to information with allowance for the expected volume of data and available; and (iv) At minimum, it is best to report condition in at least two parameters: namely roughness, which represents the impact on users costs and riding quality, and surface distress, which indicates the need for and timing of maintenance programming.

c. Work Planning:

The third phase, "Development of the Work Plan" transfers the "Work Assessment" into an "Annual Work Plan and Budget". Assistance in this area is provided again by economic analysis and cost accounting components. The Annual Work Plan developed within a reasonable time frame is an essential ingredient in establishing credibility within the kabupatens. Phases 1 thru 3 can/should be achieved within a 6-week period. Approval of this plan by the appropriate institutions within the kabupaten is essential to ensure that the allocation of resources necessary to do the work can be obtained.

d. Work Scheduling:

In order to facilitate the scheduling of force-account and contracting works, the kabupaten must provide information drawn from the approved "work plan" which should include a high degree of specificity including: (i) the road link number;

(ii) the length of the road to be treated; (iii) a description of the task; (iv) the production standards to be used; (v) the resources to be allocated; (vi) personnel by name; (vii) the nature and quantity of materials; and (viii) the equipment to be used, by the identification number of required equipment.

e. **Work/Control Reporting:**

The last phase: "Work/Control Reporting" is key to the entire feedback mechanism and provides the basis of system management. It requires preparation on the basis of a standardized system of quantification: (i) the type of work performed; (ii) how much work performed; (iii) identification of the type of labor, amount of time and type of work; (iv) the type and amount of equipment used; (v) the type and amount of material used; and (vi) the unit and total cost of resources used.

Information provided at this time also assists the adjustment of quality and production standards when they are unrealistic.

E. **Equipment Maintenance System (EMS):**

The Equipment Maintenance System Manual which was developed in direct collaboration between GOI and Consultants, is a critical step in the process of improving the management of resources and implementing institutional reform at the kabupaten level. It constitutes a major component in preparation of a road maintenance program, requiring the gathering of information needed to set up their maintenance crews for force-account and providing reliable rental equipment to contractors.

The kabupaten is responsible for its road maintenance equipment. Given the essential linkages between equipment maintenance and its availability and road maintenance capability coupled with the need to integrate the planning and execution functions of road maintenance, the application of the EMS is of top priority.

The kabupaten equipment maintenance practices noted by the team in our field trip were found to be deficient in a number of areas, resulting in poor condition of equipment utilized for road maintenance. Deficiencies vary between kabupatens visited, but the condition of equipment in most of them is below the levels required for truly effective equipment rental and utilization.

The kabupatens are reporting a shortage of equipment based on their current needs, although hours of equipment utilization are low in relation to acceptable standards. The equipment tends to be old in terms of years, but shows low utilization. This is due to the government budget cycle and weather conditions: equipment utilization takes place only during certain months of the year, thus lying idle during other periods.

The newly approved EMS was developed jointly by the RRMS and PMU consultants. This manual is designed to be used by kabupaten workshops and aims to optimize equipment availability through the improved maintenance flowing from the appropriate utilization of limited manpower and resources existing in kabupaten workshops.

This system has been introduced, through on-the-job training, to kabupatens outside the USAID project areas and was well accepted.

F. Conclusions of Technical Analysis:

Unsatisfactory road maintenance is a result of the lack of both funds and maintenance consciousness in the kabupatens. Only recently has the importance of systematic monitoring, network evaluation and regular maintenance works been recognized.

A lack of professional manpower, know-how and experience at both the central and operational levels is a serious constraint to appropriate repair and maintenance of the road network.

Maintenance/rehabilitation terminology is critical.

Comprehensive maintenance planning is only now beginning to be practiced: data for budget preparation still have little input from the field and budget scenarios are not well prioritized.

Only through proper training, both on-the-job and in cooperation with local educational institutions can satisfactory maintenance practices become effectively introduced.

The application of manuals developed under the project needs to be complemented by user's manuals and trainer's guides.

Successful introduction of equipment management concepts should be accomplished through: development of management manuals to define EMS components and responsibilities for its operations; and development of field operational manuals that set forth preventive maintenance and repair/overhaul standards and procedures to be followed by field personnel for budgeting, scheduling, performing and reporting work.

Principal recommendations are to:

1. Provide more extensive training and periodic refresher workshops and seminars for managers;
2. Establish a pilot-test kabupaten where maintenance systems can be fully implemented to demonstrate their efficiency and practicality;

3. **Improve equipment availability by introducing diagnostic/inventory management techniques.**
4. **Involve kabupatens in the development of procedural manuals and establishment of work standards.**

VI. ECONOMIC ANALYSIS:

A. Project Paper (PP) Design Assumptions:

It is necessary to begin our analysis of the actual economic effects of the RRMS Project with an examination of the results projected at the time of Project Paper (PP) preparation.

Major project design assumptions regarding information availability for determination of the economic feasibility of the project were:

- The institutionalization of traffic counts was essential for proper planning and programming of maintenance and would be taken on all kabupaten roads with traffic over 15 ADT before the project began (in 1987) and annually thereafter; and
- Road condition inventories which would define quantities of material as well as equipment needs were also essential and would be institutionalized and performed on an annual basis.

These traffic counts and inventories would provide a basis for prioritizing maintenance and rehabilitation and, hence, the annual budgets required therefor.

There was also the critical implied assumption that kabupaten officials would accept and institutionalize the system without the need for any explicit project conditionality.

The PP further put forth the thesis that it was difficult to formulate generalized prescriptions to assure that adequate funds would be available for maintenance. The nature of road networks is that they are open systems and change as demand for transport services change. They are also in competition with a range of other desired services competing for limited funding. As the kabupatens are responsible for providing reasonable levels of services on their road networks, among other perceived public needs, the primary determinants of the availability of funding would be whether:

- a maintenance policy or a no maintenance policy was the least-cost way of keeping the road network functioning;
- rehabilitation of certain road links would produce a cost-effective level of user benefits.

Annex H, Economic Analysis, of the PP described the proposed methodologies for selection of both maintenance and rehabilitation priorities. A more complete summary of these Annexes is contained in Annex 1 of the present evaluation.

The economic methodology recognized that the project's primary purpose was "to develop effective, sustainable systems of road maintenance and management at the district level". The secondary purpose, rehabilitation of selected road links, was an adjunct to this primary purpose to ensure that there was a "core network of economically viable roads" for the road maintenance program.

1. Maintenance versus Non-maintenance:

PP Annex I, Financial Analysis, examined the cost effectiveness of maintenance. The financial assumptions with which the analysis began were that: the initial rehabilitation cost was US\$ 18,000; and routine maintenance costs were US\$ 500 annually with periodic maintenance costs (every third year) of US\$ 1,730. For purposes of illustration the initial period used was 22 years. The cost of the no maintenance option was US\$ 18,000 every sixth year. When the analysis was refined on the basis of an Economic Rate of Return (ERR), the PP determined that the net present value (at 12%) of expenditures/km using a maintenance option was US\$ 26,130 over a more realistic ten-year road life period, while using a non-maintenance option it was US\$ 30,429. The conclusion was that the maintenance policy was the least cost by some US\$ 4,300 per kilometer and would therefore ipso facto be widely adopted.

2. Justification for Road Link Rehabilitation:

The principal methodology established in PP Annex H for the selection of road links for rehabilitation was a table based on vehicle operating cost savings only. This selection process was coordinated with the IBRD consulting team for the IBRD Rural Roads II project. However, Annex H went on to recommend a monitoring/evaluation survey to measure project effects on such non-vehicle activity as cash-crop production and transport price changes if considered necessary to arrive at an overall economic justification for project-supported rehabilitation.

Annex H noted one other important point, the entry level for upgrading to a sealed road was a minimum of 500 ADT, if economic efficiency were to be the criterion.

PP Annex G, Technical Analysis, showed that the estimated average costs of road works per km, including bridges, in South Sulawesi was Rp 35 million (US\$ 21,300) and in NTT was Rp 25 million (US\$ 15,200).¹ NTT had lower costs as it was assumed it had lower average volumes of traffic and most of the rehabilitation would be of earth roads (68% of the program).

¹ Rate of exchange for December 1986, US\$1.00=Rp 1644

3. Sources of Funding:

PP Annex I, Financial Analysis, notes that by far the largest and most regular sources of funds for district roads are the Inpres funds. Two of these, Inpres Dati II and Inpres Penunjang Jalan, provide more than 90% of the total.

The most significant difference between the two Inpres funds is that only Inpres Dati II is used for maintenance. Beginning in 1984, each district had to set aside 25% of its budget for maintenance. Because it is based on population, it is the most reliable of the revenue sources for the districts and the most stable for maintenance programs. Inpres Jalan, on the other hand, has no formula for its distribution and allocations to individual districts can vary tremendously from year to year.

The major assumption used in estimating road maintenance revenue requirements was that the project would rehabilitate to maintainable levels about 125 km per kabupaten in NTT and 150 km in South Sulawesi, in addition to the limited number of kilometers the PP considered to be maintainable as of project start-up.

Another major assumption was that sustainable and efficient kabupaten road maintenance programs using their own resources would not require any changes in the procedures of budgeting Inpres funds.

B. Revised Analysis of RRMS Costs and Benefits:

1. Overview:

The revised economic analysis carried out herein as part of this evaluation considers first those elements of the project with quantifiable benefits: the cost-effectiveness of the "maintenance option" for all roads; and the rehabilitation of road links which can demonstrate quantifiable vehicle operating cost savings. The amortized cost of road maintenance equipment, its own maintenance and workshops, are considered part of the maintenance program.

However, the purchase of maintenance equipment under this program for the kabupatens may not be the most efficient or effective use of resources as is examined below.

The non-quantifiable elements of the project are those associated with training, special studies, technical assistance, planning and monitoring, and evaluation/audit. These assume justification of the quantifiable elements with which they are associated. If the program is justified, these elements are justified.

2. Road Rehabilitation:

The methodology used by the consultants to justify rehabilitation of particular road links is similar to that used by Bina Marga and developed under the IBRD kabupaten rural roads projects. This methodology considers both motorized 4-wheel vehicles and non-motorized traffic, pedestrian, pikulan (head load), bicycle, becak, and animal cart, in determining the "4-wheel equivalent ADT". Traffic counts are taken on two days - market and non-market days, 12 hours each day for each link being analyzed. These twelve hour days are then averaged and converted to 24 hour counts by a standard adjustment factor. Non-motorized traffic was also averaged and an adjustment factor used to convert it to a 24-hour traffic count. For most Sulsel links, non-motorized traffic accounted for between 0% to 28%. In NTT, non-motorized traffic accounted for substantially more of the estimated benefits, ranging from a low of 17% to a high of 50%.

Benefits are measured by vehicle operating cost savings for both the motorized and non-motorized traffic using estimates of these data prepared for Bina Marga's evaluation system.

The methodology prepared by the consultants goes a step further in the initial analysis than the one used by Bina Marga. It considers social benefits and support for national development policies also. However, the consultant has stated that those benefits were not considered for the project links examined for rehabilitation. Excluding these benefits provides a better basis for ranking projects based on strictly economic criteria.

Reliability of the estimated economic rates of return must be considered fairly suspect, as the traffic counts themselves have not been rechecked. The concept that a two day 12 hour traffic count can give a high level of confidence statistically for a 365 day period is in itself questionable. The fact that neither monitoring nor re-evaluation, with one exception, was performed clearly weakens the institution building aspect of planning and evaluation based on economic efficiency. The original Work Plan detailed the need for traffic data collection, ". . . at least for the first two or three years, [it] will probably need to be undertaken or updated on an annual basis"

Only one link of some 76 contracted or tendered works has had a traffic update. That link, No. 24/31 Tanetea-Barobbo, is in Kabupaten Jeneponto and was completed February 1991. Its initial traffic count showed 16 ADT (62% non-motorized) with an ADT of 143 four years later (no percentage for non-motorized). The link's estimated economic rate of return prior to construction was 0.0% and after completion was 55.1%.

Because no updated traffic figures are available, it is not possible to re-evaluate accurately the remaining links in the project. Any re-evaluation would have to consider the same traffic data and since the methodology has been agreed to by USAID and is compatible with that used by other donors, the same results would be dictated.

A total of 588.4 km has been contracted and tendered² under the project for a cost of Rp 35.7 billion or an average cost of Rp 60.8 million per kilometer. This averages out to about US\$32,000 per km³. The average cost estimated in the PP was US\$25,400 (excluding the cost for earth road rehabilitation which was not a part of the proposed program). According to IBRD consultants, they are experiencing similar costs per kilometer in their rural roads programs and indicated that road costs are increasing more rapidly than other costs.

One point raised on the field trip for which there does not seem to be any documentation is the marginal analysis of constructing from one standard to the next higher. This was particularly notable in NTT, where the contractors constructed the first link to double bituminous surface treatment (relatively expensive), the second link to single bituminous surface treatment, slightly less expensive, and the third to penetration macadam (the least expensive surface treatment).

An overview of the economic justification of the project shows the weighted average economic rate of return for the contracted and tendered works to date.

<u>Kabupaten</u>	Weighted Average ERR
South Sulawesi	
Takalar	23%
Jeneponto	18%
Bulukumba	11%
Sinjai	15%
Bone	27%
Sidrap	19%
Overall Weighted Average South Sulawesi	20%
Nusa Tenggara Timor	
Belu	15%
Kupang	20%
Overall Weighted Average NTT	20%
Project Overall Weighted Average	20%

Source: STV/Lyon, RRMS South Sulawesi and NTT Road Rehabilitation, Summary Progress Report as of 31 August 1993

² Only 287.1 km were finished according to Tables 1A, 1B, and 1C as of August 31, 1993.

³ An average rate of exchange of Rp 1,900=US\$ 1.00 was used.

Based on the data available, and assuming that even if these benefits were halved, the overall road rehabilitation portion of the project is economically justified. But, again, the traffic data must be verified.

3. Road Maintenance:

The case for the road maintenance aspect of RRMS is far stronger than that for road rehabilitation. The following example is based on current costs: an average per km cost for road rehabilitation of US\$28,950; routine maintenance US\$1,240; periodic maintenance (every fourth year) US\$5,700. For the no-maintenance option, the road must be rehabilitated every fifth year (at US\$28,950). This is a conservative figure, as the field trip showed several roads in the kabupatens which are less than three years old requiring rehabilitation. The period used for an well maintained road posits a useful life of ten years after opening.

**PRESENT per/km VALUE OF EXPENDITURE (PENETRATION MACADAM)
MAINTENANCE versus NON-MAINTENANCE
(US\$)**

Year	Expenditure/Km (Maintenance Option)	Expenditure/Km (No-Maintenance Option)
0	28,950	28,950
1	1,240	0
2	1,240	0
3	1,240	0
4	5,700	0
5	1,240	28,950
6	1,240	0
7	1,240	0
8	5,700	0
9	1,240	0
10	<u>28,950</u>	<u>28,950</u>
Net Present Value (NPV) @12% discount	40,600	54,700

Savings with the Maintenance Option US\$14,100

This suggests that a maintenance program applied to the roads in the USAID program would save approximately one-half of the cost of rehabilitation per ten-year period over the no-maintenance option. If the maintenance program were carried out only on the

maintainable roads in the USAID project (1,895 km), the savings would amount to US\$26.7 million over the ten years, more than covering the to-date costs of the non-quantifiable elements in the project (US\$16.8 million). This does not even include the economic benefits accruing to the road users in the form of vehicle operating cost savings. Considering that the overall economic rate of return for maintaining these roads is 26%, the savings in a maintenance program option are significant.

However, despite the clearly established cost-effectiveness of a regular maintenance program, at present only 494 km (26%) of the roads in good/fair condition are even scheduled to be maintained in 1993-94; the actual rate for 1992-93, as of March 15, was only 5.4% (of which 3.6% was "periodic") plus another 4.6% to be spent on rehabilitation of roads supposedly in "fair" condition. The remaining funds will rehabilitate roads in admittedly poor/bad condition. This will create the problem already noted - since the roads are not being maintained, they need to be rehabilitated far sooner than would otherwise be the case.

4. Road Maintenance Equipment and Workshops:

The road maintenance equipment element was not quantified in the Project Paper. It was assumed to be justified as the road maintenance itself was justified. However, the ownership of the equipment is an issue - whether it should be in the private sector or public sector. The following discussion concerns both the equipment and the need for the workshops to maintain it. Apparently, this issue was not addressed until the Special Study on District Equipment Policy was carried out. This study suggests that kabupaten ownership of equipment may be economically inefficient for the following reasons:

- The demand for equipment in the kabupatens is primarily dependent upon local government road contracts;
- The kabupatens do not lend or borrow equipment from each other - there is no system for pooling equipment;
- The limited market is aggravated by the GOI budget cycle which creates peaks and valleys of demand for equipment throughout the fiscal year;
- The need to train and retrain personnel to maintain the equipment and bear the overheads required for underutilized equipment; and
- The needs, as determined by the donor agencies which are the source of much of the equipment, are based on the individual kabupaten road networks - not necessarily on the efficient use network. This has the effect that if a kabupaten needs, say, the service of one-half of a concrete vibrator for its network it would receive one concrete vibrator as there is no mechanism for sharing with other kabupatens.

The study notes that utilization rates for kabupaten equipment are extremely low in terms of age of the equipment. Anecdotal information suggests that the equipment usage is about one-third of its efficient use rate.

The report goes on to note that the "Equipment is used primarily by contractors who hire the equipment from the kabupaten for work on kabupaten road projects." Since most of these projects are actually extensions of the road systems rather than maintenance, the equipment may be receiving heavier-than-design usage. This could be harmful in two ways: equipment standing idle for long periods of times tends to deteriorate faster than if it is being used at a reasonable rate; and equipment doing work beyond its capacity may simply break down.

While there may be merit to providing some agency with equipment to do the needed works, there is some question as to the economic merit of providing redundant equipment when policy changes could effect more economically efficient usage.

Assuming that there are adequate works (this was so indicated in discussions with Chief of Party, consultant) to interest the private sector and that continued ownership of the equipment by the kabupatens is economically inefficient, the project should investigate and discuss with the GOI changes to the system.

Some of the changes required to remedy this would require macro-policy changes affecting procedures for budgeting, including multi-year contracting of maintenance to the private sector to encourage Class B and C contractors to purchase equipment; and other directive changes such as reducing the current limit of Rp 500 million for Class A contractors for maintenance works; and selling assets to the private sector.

Although the above discussion suggests that the present system of procuring road maintenance equipment is not economically efficient, it does not imply that the equipment is not required or that it is not economic to use equipment: it may, after the issue has been reviewed, be seen as the only manner to undertake maintenance in the kabupatens in the foreseeable future.

5. Questions Raised in the Scope of Work:

The following are summary answers to economic aspects of specific questions in the Scope of Work for the Mid-Term Evaluation:

In terms of overall economic efficiency, the overall economic rates of return, 20%, suggest that the roads selected to date for rehabilitation are economically viable. Since these returns are based on vehicle operating cost savings, it further suggests that the use of resources such as fuel and oil, tires, accelerated wear and tear on vehicles, is being reduced. Similarly, those vehicles which are commercial in nature will be able to make additional trips during the same time period. There is also a significant saving in vehicle operator and

passenger time, which suggests that the excess time may be used for more productive efforts or may increase the amount of leisure time available. However, these high stated rates of return on what were initially believed to be lightly trafficked roads show a need for USAID to insist on regularized and monitored traffic counts in the future.

At present, little routine maintenance is being done on the project roads because the District Public Works Departments do not yet have highway maintenance management systems and access to maintenance funding is limited. Periodic maintenance has not yet been done because it is supposed to be done every four or five years, depending upon the design life of the road itself, and none of the project-rehabilitated roads have reached that age - even though some of them have partly or completely failed and most are already showing signs of significant stress.

Therefore, the project rehabilitation investment is at risk of being lost in a very few years (as little as one year in the case of one road in Kabupaten Sidrap, Link 04-32 which was constructed in 1992 under the 1988/89 program) if the drive for institutionalization of maintenance is aborted.

In terms of equity, one segment of road users does not appear to be paying their full share (nor do any beneficiaries other than road users seem to be contributing to the roads' maintenance). Current practice on many of the roads is to permit loaded (many times overloaded) trucks to use the roads with a minimal payment. Kabupaten Sidrap charges trucks Rp 500 (US\$0.25) per trip. This vastly underestimates the damage that overloaded trucks can do to these roads.

Contributing to this problem is the fact that many of the roads are designed to a Class C road standard which provides only for a 3.6 ton axle-loading, not the eight-ton found on higher standard roads. This means that these roads will fail even more quickly. USAID should take measures to ensure that the USAID-financed roads built to these standards are protected from the passage of overloaded vehicles by requiring permanent vehicle dimension limiting gates or portals. It would be beneficial if USAID could get the kabupatens to ensure that all the roads were thus protected. Better would be having the consultants analyze the additional costs of building to higher standards where such traffic is likely to occur. Such increased standards are usually justified economically and may be so on these roads. This would be a change in Bina Marga's design standards and that agency's agreement would need to be obtained to change these standards. The best - and least likely to occur - solution would be for the GOI to institute firm controls over truck axle-loadings.

The team has been unable to make detailed analyses of specific examples of indirect project impact except for one evaluation of project impact done by the consultants for road links 24 and 31 from Tanetea to Barobbo (13.5 km). The 17% increase in houses along that link suggests that land values have been increasing.

On a more anecdotal basis, major increases in agricultural production, passengers per day, tonnages, and reductions in public vehicle fares have all been observed. It will be useful to the governments, both national and local, to have more efficient monitoring and evaluation done. The RRMS consultant should be encouraged to systematize this type of monitoring and evaluation for a representative sample of the project roads.

C. Potential Availability of Maintenance Funding:

Recurrent cost recuperations for the highway system appear to be improving. Substantial progress has been made regarding road user taxation. Vehicle registration tax levels were increased effective January 1992 and proposals for revising the structure of this tax for heavy commercial vehicles which cause most of the road damage are underway. The price of gasoline and diesel has increased over 40% in real terms in the past two years, the last increase was 27% in January 1993. While not verifiable with recent statistics, the information received suggests that road user taxes are at least capable of covering the recurrent costs of both routine and periodic maintenance for the system. (Whether they are actually used for those purposes is discussed in Section D. below.) While there is no direct link with the revenues collected and the budgets allocated to the kabupatens for roads, the pattern presented in the report, Local Resource Mobilization, suggests that the budgets are increasing in real terms to levels that would be sufficient to maintain the system. The recent program for maintenance in the nine kabupatens suggest that maintenance budgetary allocations from the Dati II funds are about 70% of that required for 1993. In current dollars, this means that there is a shortfall of about US\$2.5 million over the next five years (about US\$500,000 per year). Based on the Project Paper's analysis of the needs at that time for the five-year period, 1989/90-1993/94, the amount available for maintenance from government has increased about 35% in real terms.

D. Actual Utilization of Available Funding:

Under the present system, it is unlikely that routine maintenance as recommended in the project will receive sufficient budgetary support without the exercise of some form of leverage by USAID. "Sufficient" is defined as regular allocations of funds adequate to provide a comprehensive program of routine (and, to a lesser degree) periodic maintenance. The reasons for this are:

- There are no controls to require the kabupatens to actually perform routine and periodic road maintenance with the funds allocated to those activities;
- Political pressures require the use of these funds for road rehabilitation and construction, creating a system whereby due to lack of such routine and periodic maintenance the kabupatens can not achieve a maintainable road network;

- Maintenance requires regular adequate allowances. As there is no dedication of set budgetary amounts to maintenance, when cuts are made they are usually made across the board. Roads that could have been maintained if regularized funds had been made available must then be rehabilitated later at much greater expense;
- The fact that the kabupatens try to do maintenance with force account and their own equipment is also detrimental to efficient use of resources. Because the kabupatens cannot rely on regular budgets for maintenance, they must first provide for personnel salaries. If funding is only sufficient to cover these salaries, equipment is left idle because there is no money for fuel or spare parts for the equipment. The consultants have noted in their report on equipment, "A Proposal for Spare Parts and Equipment Procurement (Revised)" dated August 1991 that the private sector has sufficient equipment to do the necessary routine and periodic maintenance in the kabupatens. RRMS purchasing of equipment for the kabupatens should be reviewed since it does not appear to be an efficient use of resources.

A short-term solution to the ongoing problem of inadequate routine maintenance might be for USAID to set goals (a fixed percentage) of the roads to be maintained, e.g. 50% for year 1, 70% for year 2 and 90% or 100% for year 3, then fund a fixed percentage of the amount actually maintained if the target is achieved.

E. Conclusions of Economic Analysis:

The Project Paper was a well-founded instrument for preparing a road maintenance project, although its low estimate of roads then in maintainable condition led it to pay excessive attention to the need for road link rehabilitation. It also lacked insight on some basic elements of sustaining a maintenance program, mainly the limitations of the Inpres budgets used for this purpose and the authority of the officials at the kabupaten level. These elements may still be dealt with if USAID is willing to shift some funding to maintenance.

The overall ERR for road link rehabilitation is 20% and shows a level of traffic not anticipated in the PP.

If maintenance is institutionalized, the return per km maintained versus that of one not maintained, suggest that the returns will outweigh the costs by a substantial margin.

There is reservation as to the economic efficiency of providing maintenance equipment to the kabupatens. The equipment appears to be greatly underutilized and is utilized more for construction and rehabilitation rather than maintenance.

The present project lacks the data required to reevaluate work completed to date and does not have the basic information needed to institutionalize a proper maintenance program.

Implementation of the project has been less than adequate. This has been caused by an inadequate Proag and excessive bureaucracy on the part of USAID, consultants who are not fully qualified for institution building and an inexperienced government agency.

The principal recommendations are:

1. USAID should fund already committed equipment purchases and rehabilitation projects, but shift future funding to maintenance and training;
2. Annualized traffic counts and road condition inventories should be reinstated;
3. Monitoring and evaluation should be undertaken for resource mobilization and to help institutionalize the need for maintenance; and
4. Privatization of maintenance should be promoted.

VII. INSTITUTIONAL AND SOCIAL ANALYSIS:

A. Current Institutional Situation:

1. GOI Institutional Structure:

The primary central GOI agencies dealing with the project are the National Development Planning Agency (**BAPPENAS**), the Directorate General for Regional Development of the Ministry of Home Affairs (**BANGDA**), which is the GOI liaison agency with local governments, and the Directorate General of Highways of the Ministry of Public Works (**Bina Marga**), which is in charge of national and provincial road construction and maintenance and in charge of providing technical guidelines to the District Departments of Public Works (**DPUKs**). The local agencies involved are the Regional Development Planning Agencies (**BAPPEDAs**), the Districts (**Kabupatens**), and the District Departments of Public Works.

Ever since Presidential Decree 5/1974, the GOI has been paying attention to the concept of governmental decentralization, under which increasing amounts of decision-making powers would devolve to the regions and districts. The primary implementing agency for decentralization is BANGDA. Since one of the major tenets of USAID's Program in Indonesia is support for decentralization, it chose BANGDA as the implementing/executing agency for RRMS, despite the fact that BANGDA lacks technical expertise in road construction and maintenance. Bina Marga has such expertise but, as a Central Government entity, does not serve to further the thrust toward decentralization. Moreover, despite its adequate performance in the maintenance area, it maintains a preference for construction/rehabilitation

Despite its limited technical capacity, BANGDA clearly has the organizational capability, if properly motivated and assisted by the project, to carry out the administrative reforms needed to introduce economic efficiency criteria in the road maintenance planning and programming of the BAPPEDAs and DPUKs, thus helping to demonstrate the savings that can be engendered by timely maintenance.

2. Project Experience to Date:

It has been clear from the beginning that the project is dealing with an **institutional** problem, which must be dealt with through BANGDA and the kabupatens, rather than a perceptual problem about the importance of maintenance on the part of the GOI as a whole. This is evidenced by the generally fair to good condition of the national and provincial roads maintained by Bina Marga. Nor is it a problem of the Outer Islands versus Java: both IBRD/ADB reports on kabupaten road programs in Java and the evaluation team's experience driving on some of those roads find them just as poorly maintained as those in the project kabupatens.

The degree to which a degree of maintenance consciousness similar to that of Bina Marga and the GOI overall exists on the part of the kabupatens and their BANGDA Pusat backups is difficult to evaluate, since they frequently express an appreciation of the theoretical importance of maintenance - which they couple with an inclination to spend their limited human and financial resources on rehabilitation.

A partial cause of this problem has been differing perceptions among the parties of the definitions of such terms as routine and periodic maintenance, rehabilitation, and reconstruction. This can lead to a good faith belief that the engineering betterment - if not the institutional - objectives of the project are being fulfilled when, in fact, they are not. The standard definitions that must hereafter be complied with are set forth above in the Technical Analysis.

In addition to more precise definitions, there will need to be a greater degree of insistence on the priority that must be given to maintenance from the consultant and USAID, to balance the political pressure from constituents to lay down asphalt. Since the organizations (kabupatens, BAPPEDAs, DPUKs, etc.) already exist and have a theoretical understanding of their obligations, along with many of the manuals and other indicia of systems, the key test for RRMS is to bring about the testing and adaptation of the manuals/systems, followed by their adoption in actions as well as words by the appropriate organizations. The test will come when non-maintained kabupaten roads begin to fall apart visibly, while those that can/will/must be maintained under the (recommended) continuation of the project remain in as good condition as Bina Marga's.

Among the more significant impediments to institutionalization has been a serious lack of communication, not only between the three principal parties: GOI, Consultant and USAID, but within each of them. The evaluation team has noted widespread levels of unawareness, misinformation, and differences that could and should have been resolved.

Once the basic institutional development thrust of the RRMS project has been re-established, such communication failures will become substantially less likely. Nevertheless, to avoid their possible recurrence, a regularized schedule of meetings among USAID, the Consultant and GOI should be instituted.

B. Institutional Requirements for Sustainability:

In view of the limited degree of institutionalization and the uncertain prospects for sustainability of the project to date, balanced against the organizational capacity that exists, the solid achievements that have been fashioned, and the potentially useful building blocks that are now in place, the question at issue is how to avoid losing much of the investment already made and obtain maximum benefits from the assets created.

The prospect for institutionalization and sustainability of the systems developed under the project depends first upon their widespread acceptance. It is crucial that both the decision makers and the people they represent accept road maintenance as a priority activity.

Equally important in the long run is the ability of the project kabupatens to obtain sufficient funding, in whatever combination of cash and services may be available, to carry out their routine and periodic maintenance programs.

The keys to project institutionalization and sustainability lie in successfully dealing with the following issues:

- Training of sufficient scope and quality to impart the essential knowledge to the people who need it.
- Development of private sector contracting and equipment capabilities to supplement and eventually supplant the current regime based primarily on force account.
- A viable policy of equipment ownership and rental to meet both the needs of the private sector for equipment availability and of the kabupatens for rental income.
- Funding in sufficient amounts, with sufficient incentive to put toward maintenance, and with sufficient time to permit orderly implementation of a maintenance program.

1. Training:

During its visits to both NTT and South Sulawesi, the team witnessed instructors conducting training in the district road equipment workshops as part of the central Bangda activity.

These instructors consist of:

- Those who come from the private sector and have been contracted by central Bangda; they give technical training to the workshop technicians and their involvement is about 60% of the total training effort.
- Those that are sent by the provincial public works (Propinsi Bina Marga) who are government technicians. They train in the procedural processes and workshop administration, using Bina Marga as well as Bangda manuals; their involvement is about 40%.

The subjects of this workshop training are:

- Road maintenance;
- Equipment maintenance;
- Equipment operation; and
- Road construction/rehabilitation supervision.

The primary system of transferring knowledge in these activities is through on-the-job training (OJT). 40% of the training being "classical" and 60% actual in-the-field practical exercises.

Training courses generally involve less than 10 people, so this must be considered as intensive training. However, since most participants are workshop technicians and still have a responsibility for their routine work, they frequently have to leave the training course and do their routine work. Since training in equipment maintenance is critical for having a self sufficient workshop unit, improvements have to be made.

To guarantee the sustainability of this kind of training, the involvement of the technical school (Fakultas Teknik or Fakultas Polyteknik) of the provincial university will play an important role. If the university does not pay attention to this matter, an alternative will have to be found in the private sector, e.g.:

- local NGO'S who conduct technical courses in Ujung Pandang and Kupang; or
- the branch offices or dealers of road equipment products.

The participants in these kinds of training course must also include some from the private sector, especially the categories of B-2 and C contractors. Then both the government technicians and the contractors will have the same knowledge and a good understanding of each other's point of view.

It is the team's impression that the ongoing training represents a good start on what is needed, but falls well short of being sufficient to meet project needs. However, in view of the advent of a new RRMS training team, it is expected that the pace will be picked up to a satisfactory level within the next few months.

2. Private Sector:

Encouraging development of the small private contractor sector in the kabupatens through an increase in the amount of routine maintenance contracting, which is within their capability, and perhaps even some contracts for periodic maintenance on dirt and gravel roads, can help with democratization and private sector development as well as sustainability in several ways:

- It diversifies both political and economic participation to people who might otherwise be left out;
- it results in lower cost maintenance work and greater transparency in contracting;
- it creates taxpayers; and
- it helps establish the popular feeling that: "these are our roads and we must help take care of them."

Pilot projects should be undertaken testing both routine and periodic district road maintenance, including more involvement of B-1 and B-2 contractors, as well as the USAID/ARD pilot on the management and operation of equipment workshops.

Since potential small contractors presently lack both political and economic strength, the processes of maintenance contracting and, especially, payment for services rendered must be examined. The contracting procedures have been substantially reformed by adoption of TEST, but continued supervision by the institutional consultant will be required.

The chaotic area of payment for services rendered requires particular attention: there have been numerous well-founded complaints from contractors concerning delays in both progress and final payments for road construction. Since the contractor uses bank money with an interest rate of 2 % per month, slow payment processes cause the contractor a financial loss.

Not only do the contractors suffer, but when an installment payment is late, the contractors may also slow down the work, affecting the time required for performance as well as the quality of the road.

A particular burden is the requirement that payments have to be collected in Jakarta, rather than in the provincial city through any bank that has a central office in Jakarta.

3. Financial Sustainability:

a. Equipment Maintenance Equipment:

A major area of sustainability involves the ownership, management and maintenance of road working equipment. This entails a strong potential for both lower cost road work and revenue generation for local governments.

At present, in all of the kabupaten workshops there are two kinds of equipment ownership: i) National or provincial government, which requires permission from the Bina Marga provincial office to rent and for which the rental fee goes to the central government; ii) Owned by the district government and needing only the district office permission; the rental fee goes to the district.

To increase the capability of conducting decentralization at the district level, the national/provincial road equipment should be transferred to the districts as soon as possible. This will:

- Give the districts a solid equipment base. The later the transfer, the heavier the burden on the districts, however, since the equipment will have further deteriorated and its operational cost will be higher.
- Increase district income. The rental payments will go to the district treasurer and increase the income available for the purpose of equipment maintenance.

Equipment workshop management is under the head of the district public works (DPUK), who is responsible directly to the Bupati. The activity is starting to use the equipment maintenance system produced by the USAID project, and must be assisted in this area. If the efficiency of the unit's management could be increased, rental income would meet operational costs and the workshop would become a self supporting unit.

b. Sources of Funds:

The principal indigenous sources of general funding which can be used, at least in part, for rural road maintenance are:

- Impres DT II, which can be used for road maintenance up to 20/30% of its total;
- Impres Jalan, which can also be used to 25% (with a minimum of 250 million rupiah).

Other potential general sources are:

- increased land prices generating revenue through land and building taxation;
- gas and oil taxation.

However, at present, both of these are dependent on central government policy and can not be addressed at either provincial or district levels. A test of the government's commitment to decentralization will be the degree to which it permits the dependence of the districts on funds from the central government to decrease, by allowing a greater proportion of land and other taxes to be levied by the districts.

Based on DFM team findings in their special study in March 1991, possible dedicated local sources of funds for road maintenance could include:

- Road user charges, which can be adopted for commercial vehicles on high traffic links;
- The crop cess method, which would be applicable if around the road link there were many factories and agribusiness products.

Several schemes have already been tried for Local Resource Mobilization. The only one which seems to have had some success was the toll-road scheme in Kabupaten Pinrang, where high tolls for commercial vehicles have been put into force. While analysis suggests that these tolls are sufficient to cover routine and periodic maintenance and administrative costs, they would have to be two to three times higher for trucks to cover the damage caused if only a few of these vehicles were overloaded.

There are two points on budgeting policy concerning roads (all infrastructure for that matter), that USAID may wish to pursue with GOI. The first is allowing a percentage of the budgets for roads to be extended to 18 months (this currently can be done with donor funds for a maximum of two cycles or 3 years). This would override the climate problems and help stabilize staffing. The second is to permit multi-year contracting. This would help to regularize the maintenance and would provide security for the smaller contractors to acquire equipment. This is a macro issue and would need to be addressed on that scale. There is talk that this issue is being discussed in Bappenas and MOHA, but there is no factual information on the progress of such discussions. If these can't be changed, then perhaps the GOI fiscal year could be changed from January 1 - December 31 to October 1 - September 30.

As previously noted, DATI II funds are the principal source of funding for routine maintenance. The amount of these funds for 1993/1994 is Rp 15.1 billion of which Rp 3.6 billion is being allocated to roads. If used only for routine maintenance, this would provide about Rp 1.9 million per km of the maintainable network (1,895 km) or about 70% of the requirements (Rp 2.6 million/km).

There also appears to be ample funding available that could be used for periodic maintenance. The 1993/1994 Inpres Jalan for the nine kabupatens amount to Rp 26.7 billion for 311.2 km of road works-averaging about Rp 85.8 million per km, an amount 40% higher than the USAID funded rehabilitation program. (Rp 60.8 million/km on average). If these

two funds were pooled, the kabupatens would have about Rp 30.3 billion for roads. The routine and periodic maintenance costs are estimated to Rp 2.6 million per km and Rp 3.0 million per km respectively for a total of Rp 5.6 million per km or Rp 10.6 billion for the 1,895 km which are maintainable. If the kabupatens were to use these funds for maintenance, they could also rehabilitate about 228 kms of roads at Rp 85.8 million or 25 km per kabupaten. If the average cost per km could be reduced to be more in line with the reported higher quality roads the USAID project is building, then the kabupatens could actually increase the number of kilometers being rehabilitated to 322 km (or 36 km per year per kabupaten).

USAID may wish to discuss this point with BANGDA, particularly the seemingly excessively high average, and see if there could be some economizing and use the surplus for maintenance.

4. Incentives to Implement Maintenance Programs:

In addition, attention must be paid to finding a way to insure that the kabupatens will actually carry out maintenance programs of sufficient scope for a long enough time to demonstrate the essentiality of maintenance, in the face of continued political pressure to utilize scarce funds for rehabilitation. This may call for the utilization of "leverage" by USAID to help impel the local governments to do something politically difficult

Traditionally, donor leverage is obtained through either the positive means of funding activities the donor considers to be important or the negative approach of withholding funding for activities of which the host country is desirous.

a. Potential Negative Leverage:

In the case of RRMS, the possibility of utilizing any sort of negative leverage would be severely restricted by the long implementation period already past, coupled with the limited amount of additional capital funding USAID is likely to put into the project in the future. The withholding of either technical assistance or training has never been a major source of negative leverage, and would not be likely to fare better in this case, where the perceived quality of prior TA and training has garnered mixed reviews, at best, among the GOI officials interviewed.

b. Potential Positive Leverage:

The possibility of putting limited additional USAID funding into a temporary support program for actual maintenance, as set out in the economic analysis of this evaluation, with conditionality requiring the GOI to carry out a program of institution-ization of maintenance activities, remains. Effective utilization of this approach would require the following:

- Valid and mutually agreed-upon definitions of routine and periodic maintenance, rehabilitation and reconstruction;
- Agreement among all parties as to the priority to be accorded to maintenance as against rehabilitation;
- Carrying out of essential information-producing activities such as traffic counts and methodologically sound road condition inventories on an annualized basis; and
- Insistence that consultant's staff have capacity to assist in and monitor performance of the above functions, as well as the carrying out agreed maintenance activities.

C. Social Considerations:

1. Grass-Roots Project Selection:

The "bottom up" process utilized in the selection of road links for rehabilitation was describing in detail to the evaluation team, with emphasis on the way citizens' groups spoke up in town meetings about their need for roads, how these reports were taken up to higher governmental levels and finally to the regional planning agencies before final decisions were made. This same grassroots approach is expected to be used when similar decisions come to be made on road maintenance, since once the people begin to understand the importance not only of building roads but of keeping them in good condition, the same democratic forces will be operative. Moreover, the heavy emphasis on institutionalization under RRMS will reinforce the ability of the people to influence their local governments.

As with any exercise in grassroots democracy, this process can sometimes lead to short-sighted and technically or economically unsound decisions; the remedy, however, is not to abandon the bottom up concept, but to extend educational programs so that all levels of society may understand.

2. Women In Development:

The RRMS Project confers numerous benefits upon the women of the kabupatens served, although they are not specifically targeted under the project.

The principal benefits flow from their status as road users: many women in the project areas are shopkeepers, traders, participants in handicraft activities and farmers. Of equal importance, women especially benefit from the "social" benefits of improved roads: better access to health clinics and family planning inputs as well as cultural events for themselves

and their families and to schools for their children. Likewise, in their traditional role as homemakers, they enjoy the enhanced access to food and other market facilities to improve their quality of life.

Moreover, as in many developing countries, women frequently engage in road labor - in particular, many routine maintenance activities are especially well suited to women - and in classic Indonesian tradition there are several women in the project areas who are owners or managers of small construction firms. Project emphasis on providing opportunities for such small firms will therefore serve the additional goal of encouraging female-run organizations.

In order to better evaluate the WID impact of the project, future analyses of project employment generation and economic benefits should be designed so as to obtain gender-disaggregated data.

VIII. IMPLEMENTATION MANAGEMENT ANALYSIS:

A. Project Start-Up:

The most critical implementation difficulties were encountered in the early years of the project. Instead of immediately selecting a long term technical assistance (TA) contractor, USAID tried to expedite project implementation by using an 8(a) firm on an 18 month "bridging" contract, while entering into the contracting process for the longer term. This approach proved to be counterproductive, however, insofar as the institutional development heart of the project was concerned, since the initial consultant focussed almost exclusively on the road rehabilitation aspect of the project, misleading the Indonesian counterparts into the (willing) belief that was the primary thrust of the project. (It should be noted that the bridging contractor apparently did an adequate job on planning and execution of the rehabilitation works, given the capacity limitations of the local governmental units and private contractors.)

When the long term consultant team finally arrived at post in July-August 1989, key members of the initial team turned out to be unsuited for their functions and had to be replaced at the insistence of USAID. The aspect of their inadequate performance directly related to our evaluation remained an overemphasis on road rehabilitation, to the detriment of institutionalization and sustainability; there were also a number of personality problems. Moreover, an excessive concentration of the TA team in Jakarta hampered the prospects for successful project implementation and had to be rectified by the consultant, again at USAID behest.

As a result of the above, the present long term TA contractor team did not begin effective operation until the fall of 1990. The practical effect of the initial implementation problems and their severity was therefore that the primary objectives of the RRMS project, as designed, did not begin to be put into sharp focus or addressed in a systematic and cohesive manner until well into the course of project implementation.

Thus, although the project is **nominally** in its sixth year of implementation, the requirement of making an accurate projection of future results impels the evaluation team to judge project results in the vital areas of creation of maintenance awareness, institutionalization and sustainability as having had an **actual** implementation period of only three years.

B. Ongoing Implementation Shortcomings:

1. GOI:

GOI difficulties in implementing the RRMS project stem partly from the complex and competitive nature of the organizational structure involved in their implementation, and partly from the convoluted budgetary processes (hopefully in the process of being rationalized) under which their entire government operates.

A rivalry exists between BANGDA and Bina Marga in the roads area, exacerbated by the fact that earlier road projects by both the IBRD and ADB had used BANGDA as their executing agency. However both Banks have more recently shifted to Bina Marga, citing BANGDA's limited technical expertise, leaving RRMS as BANGDA's sole entry in the roads sweepstakes.

In fairness to both agencies, it should be noted that most of the officials interviewed felt that the level of cooperation between the two was improving substantially.

A critical brake on the effectiveness of the decentralization program - and upon implementation of RRMS - is the dependence of the local governmental units on financial subventions from the central government, rather than possession of independent sources of revenue. Local ability to levy taxes is limited and the local tax base small. This matter is being considered by the GOI, but little can be seen by way of actual movement toward resolution.

One aspect of the budgetary problem is that the rigidities of the process leave the project kabupatens (and everybody else) without funds for at least the first two months of the Fiscal Year (April and May); it is often longer than that before funds get to the outlying regions in which the project is operating. This syndrome is exacerbated by the facts that the kabupatens will not start the contract tendering process when the funds are obligated, but prefer to wait until they are actually in hand, creating an additional delay of two or more months until work can commence - which comes close to the start of the rainy season in Sulsel!

Another GOI budgetary problem is the slow and complex procedures the contractors need to go through in order to receive payment for work done, frequently requiring costly flights to Jakarta to pick up their checks. This inevitably requires them to charge more for the work to compensate for the cost of working capital.

2. The Consultant:

As discussed elsewhere in this evaluation, the long-term consultant can lay claim to some substantial accomplishments. However, it has also displayed a number of major shortcomings.

Principal among these are:

- Continued excessive attention to rehabilitation over maintenance and, especially, institutionalization;
- Failure to conduct annual traffic counts and road condition inventories of sufficient specificity to provide adequate information on quantities of materials, equipment and labor, the building blocks of sound maintenance planning;
- Inadequate monitoring of kabupaten performance on such agreed actions as actual operation of equipment maintenance workshops and use of road maintenance funds for maintenance instead of rehabilitation;
- Lack of a long term, economically justified program for road rehabilitation and maintenance;
- Inadequacy of training plans and procedures, causing USAID to contract another firm for training; and
- A confrontational approach toward attempts at constructive criticism, making it generally more difficult to administer the project and resolve problems.

3. USAID:

Perhaps the most basic USAID shortcoming was that it, like the other RRMS players, tended to let itself be distracted by the challenges of rehabilitation/reconstruction while paying less heed to maintenance, institutionalization and sustainability. This can be most readily seen in a screening of PILs and other USAID documents, which are weighted toward matters dealing with rehabilitation, contracting therefor, and equipment purchasing.

Another cause of project implementation difficulties has been delays in the multitude of required USAID approvals. Although many of these have legitimately resulted from unsatisfactory material presented to USAID for approval, others have resulted from a combination of USAID's procedural complexities and either an insufficiency of human resources or a low time priority.

These problems of internal procedure should have been subject to Mission re-examination as of June 1991, at the latest, when the Minister of Home Affairs so requested. No such re-examination appears in the project records; one should be carried out.

Equally deleterious to project implementation has been USAID's inability to act decisively on retention or replacement of the long-term consultant. As the result of real and perceived shortcomings in consultant's performance, USAID has lacked confidence to fully accept consultant's continuation on the project - but has not been able to bring itself to definitively seek another firm. By renewing the consultant's contract for only short periods of time, USAID compelled the consultant to do likewise with its personnel. The resulting uncertainty of job tenure has had a detrimental effect on employee morale and efficiency. Another USAID shortcoming has been failure to authorize a project evaluation when needed. Had the present evaluation been carried out in March 1992 as called for in the 1991 PIR, the revised Consultant team would have had a year and a half to prove either its understanding of the project purpose and ability to put it into effect - or its lack thereof - and USAID would then have more than three years before the PACD to implement changes.

Perhaps most damaging of all has been the lack of "teeth" in the Project Grant/Loan Agreements. Although there are Conditions Precedent to disbursement tranches, these CPs call only for plans and the establishment of organizations, rather than performance and the functioning of those organizations. Nor are there any Covenants on the part of the GOI to do the things agreed upon.

IX. OTHER DONOR COORDINATION:

Coordination of the RRMS Project with other donor activities in the roads sector is essential, not only in the abstract sense that such coordination avoids confusing the host country with contradictory donor requirements and maximizes the development effects of all donor activities, but for the more concrete reason that the World Bank (IBRD) is carrying out road projects in 145 kabupatens and the Asian Development Bank (ADB) in 50, compared with the nine of RRMS. Failure to coordinate will, therefore, impact most unfavorably on RRMS.

The evaluation team met with resident representatives of both IBRD and ADB. They expressed strong interest in coordination with USAID, although relatively little in the way of formal arrangements have yet been made. The team also met with consultants on both IBRD and ADB road projects, who indicated that a considerable amount of cooperation was, in fact, ongoing at the working level.

There is ample opportunity for interaction:

- Both banks are coming to realize the critical importance of maintenance, the failure of the GOI to maintain its newly constructed or rehabilitated roads adequately, and the severe adverse consequences of such failure. The stated objectives of RRMS are therefore of great interest to them.
- Both are financing a portion of the maintenance cost for the roads covered under their newer loans, an indicator of their belief the GOI cannot be persuaded to do so through the use of negative leverage alone - even the immense leverage of their multi-hundred-million dollar projects.
- Both are eager to take advantage of the lessons learned in RRMS, whether negative or positive; both have expressed an interest in the systems and manuals produced under RRMS, at least to degree that those systems and manuals have been well enough tested to prove their value.
- Both have training and institutional development components, working with BANGDA, which could and should tie in with RRMS activities.

The need for prompt action on USAID-Other Donor coordination is reinforced by the fact that the ADB is presently planning its future Indonesia program in conjunction with the GOI Five Year Development Plan (REPELITA VI) and the IBRD is in the process of authorizing a large rural roads program containing a major component for maintenance.

The RRMS DIR Wrap-Up called for a Donor Forum to be sponsored by the project in FY 1993. This Forum should be held as soon as possible.

X. LESSONS LEARNED, CONCLUSIONS, AND RECOMMENDATIONS:

A. Lessons Learned:

- Institutional development projects are best implemented by organizations specializing in that subject, rather than by technically oriented firms.
- Such projects also need earlier and more frequent external evaluations than projects producing a relatively easily measured physical output.
- The modern USAID tendency to use Project Management Units (PMUs) as intermediaries between the Mission and the long-term consultants is sound in light of manpower limitations imposed upon USAID and would have done much to relieve the burden of implementation that so overwhelmed the Mission, had it been instituted at the time of Project authorization. Given the added complexity of another layer of bureaucracy, however, it is questionable, however, whether such a unit would serve this purpose so far into the project.

B. Conclusions:

- The project was reasonably well conceived, but has not been optimally managed by any of the three principal parties: GOI, Consultant(s) and USAID.
- The prospects for future project implementation have been considerably enhanced by: a greater understanding of the importance of maintenance on the part of the GOI; changes in Consultant personnel and staffing patterns; and a new USAID Project Manager, coupled with the stated determination of Mission Management to reform USAID procedures.
- Nevertheless, the "Paradigm Shift" discussed in Section D. below: **Recommendations on Management Structure** would appear the best way to maximize project sustainability.
- The potential value of the manuals and systems produced by the project is very substantial, but could be lost without an adequate training program (including a feedback loop) to refine and disseminate them.
- Roads rehabilitated under the project are at grave risk of deterioration and the project-initiated glimmerings of GOI understanding of the importance of maintenance are in danger of being lost by the present incomplete status of virtually all project activities.

- In view of the limited negative leverage possessed by USAID at this stage of the project, serious consideration must be given to the exercise of positive leverage through limited USAID funding of a portion of road maintenance costs for the remainder of the project life.
- Given the pace of progress in Indonesia, continuation to the present PACD of August 1995 is not likely to provide enough time; an extension to August 1996 would greatly increase the chance of acceptable maintenance system institutionalization and sustainability.
- Rehabilitation activities and equipment purchases are of substantially less value to project institutionalization and sustainability than assistance to maintenance, training, and institutional support activities.
- Rehabilitation activities and equipment maintenance must be monitored with greater precision than in the past.
- Adequate data is essential for operational efficiency and economic justifiability, but has been lacking.
- Coordination with other donors is essential to insure optimum benefits to donors and host country alike,

C. Overall Recommendations:

- The "Paradigm Shift" discussed in Section D. below should be adopted.
- Direct consultations should be held with BANGDA, BAPPENAS and Bina Marga: to apprise them of the importance USAID attaches to the institutionalization and sustainability of road maintenance activities; to obtain their agreement to implement the project accordingly; and to help open up the lines of communication that have so far functioned in less than an optimum manner.
- Further rehabilitation activities and equipment purchases other than those already committed should not be authorized.
- USAID should push for further privatization of maintenance: the kabupatens do not have either the regularized funding or the trained personnel to enable them to maintain equipment fleets or large force accounts.

- USAID should examine the possible need for applying some direct funding to performance of maintenance to demonstrate in action its essentiality for a viable road network.
- Contingent upon satisfactory resolution of the above questions, USAID should extend the PACD until August 1996.
- Monitoring and evaluation of all aspects of project implementation should be tightened.
- Coordination with other donors should be given high priority and formalized.

D. Recommendations on Management Structure:

There appear to be five principal options for the future management structure of the RRMS project:

1. Terminate the project ASAP.

This option might permit considerable savings in USAID budgetary and human resources.

HOWEVER, it would result in major loss among the substantial benefits already accrued by the project, which constitute useful building blocks upon which a solid structure can be built but do not constitute such a structure themselves. Furthermore, it is unclear whether these savings could be transferred into other USAID program activities or would be lost to the development program in Indonesia.

The next two options would be valid whether the project is continued to its present August 1995 PACD, or is extended for one or more years.

2. Continue the project with minimal management changes on the part of either USAID or the long-term consultant.

This option would obviate the immediate task of designing and effecting major management changes.

HOWEVER, it would make anything approaching satisfactory attainment of project objectives quite unlikely and would constitute an ongoing management burden on the Mission.

3. Continue the project with some changes on the part of USAID, but a substantial management re-orientation by the long-term consultant.

This option would: preserve USAID from having to make major changes in its own management structure, and from undergoing a full-blown tendering process for some form of re-defined consulting services; and would retain a consultant firm with an extensive background in the project and its problems.

HOWEVER, it would: require USAID to take considerable pains to define what changes it wanted and why; run the risk that the deficiencies in consultant's performance are structural; and risk sending the GOI a "more of the same" message.

The final two options would be valid only if the PACD is extended for one or more years, **as the evaluation team will recommend**. They would also require USAID to engage a short-term consultant to prepare the required Scopes Of Work.

4. Change the management structure at the USAID end by contracting for a Project Management Action Unit (PMAU), while leaving the current long-term consultant in place; the evaluation contains an Annex describing a successful PMAU.

This option would permit USAID to manage the project within available resources thru the PMAU while keeping an operating consultant with background in the project and its problems.

HOWEVER, it would: require a full competitive procurement procedure to contract for the PMAU; create tensions between the PMAU and the long-term consultant; and also indicate to the GOI the absence of major change in project focus.

5. Enter into a "Paradigm Shift" through: a return to the institutionalization/sustainability theme of the original PP; reinforcement of this shift by employing a consultant more oriented toward those factors than toward engineering; and extending project implementation for one or more years.

This option would bring in a consultant with the type of expertise to do the job as it should be done and a clear understanding of what that job is; it would make it plain to the GOI that institutionalization/sustainability must be the prime focus of everybody's efforts; and it would allow sufficient time for the process to take place.

HOWEVER, it would: require a full competitive procurement procedure to contract for the new consultant, plus a start-up period for that consultant (which could be minimized by loading the SOW toward firms which already have a presence in country); and risk some diminution of effort during the remaining five months of the current consultant's tenure, as it prepares final reports to justify its performance and - presumably - prepares to tender on the new contract.

The SOW for the process of obtaining a consultant to implement the paradigm shift will be complex. A consultant with extensive experience in institutional development should be retained for that job under USAID supervision.

E. Changes to Logical Framework:

Per the 1990 Revised RRMS Strategy, the following are to be added to the Logframe Outputs:

"Open, competitive contracting system established to ensure fairness and adequate quality at reasonable cost."

"A link selection methodology compatible with local planning requirements will be developed and utilized by DPUK staff."

The following changes are to be made:

The number of kabupatens to be included in the project will remain at nine; the number of kilometers to be rehabilitated will be reduced to 500;

ANNEX 1.
ECONOMIC AND FINANCIAL FACTORS

Annex 1

RURAL ROADS MAINTENANCE SYSTEMS PROJECT
MID-TERM EVALUATION

ECONOMIC AND FINANCIAL FACTORS

BACKGROUND

Summary of Project Paper, Annex H, Economic Analysis

Annex H, Economic Analysis, of the Project Paper describes the proposed methodology for the selection of rehabilitation priorities and the selection of maintenance priorities.

The proposed economic methodology recognizes that the project's purpose is "to develop effective, sustainable systems of road maintenance and management at the district level".¹ The secondary purpose, rehabilitation of selected links, is an adjunct to this primary purpose to ensure that there was a "core network of economically viable roads" for the road maintenance program.² The methodology selected for the selection of road links for rehabilitation was a single table based on vehicle operating cost savings only. The selection was coordinated with the IBRD consulting team for the IBRD Rural Roads II project³ (IBRD had initiated its rural roads program in 1981 and will appraise its fifth rural roads program this year, 1993).

The matrix showed the levels of ADT required to justify base year rehabilitation/upgrading costs ranging from Rp 8,960,000 (US\$8,000) to Rp 39,200,000 (US\$35,000) with IRR's ranging from 6% to 15%. A ten-year period, with a traffic growth rate of 5% was implied. The table below shows the traffic required to justify major road costs assuming an opportunity cost of capital of 12%.

¹ Agency for International Development, Washington, D.C. 20523, "Project Paper, Indonesia: Rural Roads Maintenance Systems (497-0353)" June 12, 1987.

² Ibid

³ Discussions with Mr Roger Gould, Team Leader, IBRD Kabupaten Roads Development Projects, October 1, 1993.

REQUIRED LEVELS OF ADT TO JUSTIFY MAJOR ROAD TREATMENT COSTS

Base Year Rehabilitation/Upgrading Costs-Rp 000/km (US\$)/km				
	<u>8960</u>	<u>17920</u>	<u>28000</u>	<u>39200</u>
	(8,000)	(16,000)	(25,000)	(35,000)
IRR				
12%	63	112	199	279

In selecting the simplified approach for the roads to be rehabilitated, the Annex H discussion noted that previous donor invented methods had attempted to incorporate measures of producer surplus as a complement to the conventional consumer surplus (vehicle operating cost savings) screening indices. But these approaches had proved complex, had produced inconclusive results, and in the end had always necessitated resorting to traffic counts and vehicle cost savings as the basis for road selection.

The Annex also recommended a monitoring/evaluation survey to measure project effects on non-vehicle activity such as cash-crop production and transport price changes if considered necessary.

For the selection of maintenance priorities, initially, the Annex recommended that road links and bridges in "good" condition and the best 20% or so in "moderate" condition begin receiving regular maintenance as soon as possible. Annex G, Technical Analysis, of the Project Paper, indicates that, based on the assumed reliability of the kabupaten's road condition inventory, that the initial road maintenance program should include: 1) all good asphalt; 2) 20% of the asphalt in "fair" condition; 3) 75% of the gravel (Telford) was not maintainable and only 25% of the "good" gravel was maintainable; and 4) 5% of the "fair" gravel. The length of the network inventoried by the kabupaten (using only the 9 kabupaten currently in the project) was 5,329 kilometers. The kabupaten's road condition inventory showed that the total for all the roads in "good" and "fair" condition was 1,747 km. Annex G assumed reliability suggests that only 390 km were actually maintainable. It should be noted, that earth roads, of which there were 1,469 km in the inventory, were not to be considered in the maintenance program. The economics of this as shown in Annex H is that it is more cost efficient to simply rehabilitate earth roads than to provide annual routine maintenance.

Standards and definitions were detailed in Annex H. Briefly, the Indonesian Roads Department (Bina Marga) recognizes three road classes for kabupaten roads:

KABUPATEN ROAD CLASSES

	<u>IIIA</u> (Sealed)	<u>IIIB</u>	<u>IIIC(Unsealed)</u>
	<u>Asphalt</u>	<u>Sealed</u>	<u>Gravel</u>
		<u>Gravel</u>	<u>Gravel/Earth</u>
ADT	500-3000	200-500	50-200
			<50

The district (kabupaten) definitions of road work proposed by Bina Marga are:

- New Road Construction: completely new road over existing tract with or without new foundation or new surface;
- Upgrading: increase of serviceability and reliability, i.e., upgrade from gravel to asphalt;
- Rehabilitation: of reliable roads (all seasons), to return a road to its original state of service, e.g., asphalt overlay;
- Support Work: restoration of deteriorated (non-reliable) road to original standard, i.e., resealing, recoating, etc.;
- Road and Bridge Maintenance: patch potholes; repair ruts, drainage, signs; blading on gravel road; clean culverts; fill depressions; bush clearing, grass cutting, road shoulder repair; bridge cleaning and painting; and other minor works.

As rehabilitation is an integral part of the project, it is worthwhile to note that Bina Marga's definition for this activity is expanded in the Annex H, to "Rehabilitation is reserved for all-weather roads, open 350 days per year, or not closed more than 5 days consecutively due to poor drainage, flooding, or poor alignment contributing to both. This definition protects against the rehabilitation 'to its original state of service' of an unreliable road, which would revert to a poor state seasonally".

The Annex goes on further to say that rehabilitation efforts may expect to confront ill-defined and overlapping road conditions in the field. The project must be prepared to rehabilitate roads to a standard which has a consistent maintenance program and cost, is associated with dependable (and fewer) surfacing types, and is consistent with ADT volume and local weather patterns. "Too strict a distinction between upgrading and rehabilitation would operate against meeting this goal."

Annex G, Technical Analysis, shows that limited upgrading was expected during the project as shown in the following:

MODEL DISTRICTS IN SOUTH SULAWESI AND NTT FOR REHABILITATION

South Sulawesi

Rehabilitation	74%
Upgrading	26%

NTT

Rehabilitation	91%
Upgrading	9%

This same Annex G (Table 3) shows that the estimated average costs of road works per kilometer including bridges in South Sulawesi was Rp 35 million (US\$21,300) and in NTT was Rp 25 million (US\$15,200).⁴ NTT had the lower costs as it was assumed it had lower average volumes of traffic and most of the rehabilitation would be of earth roads (68% of the program was rehabilitating earth roads).

Annex H notes one other important point, the entry level ADT for upgrading to a higher road classification. Based on vehicle operating cost savings using a 15% rate of return criterion, the Annex shows that the economically justified thresholds are higher than the Bina Marga design criteria as follows:

COMPARATIVE ADT DESIGN THRESHOLDS FOR 15% RETURN

<u>Treatment</u>	<u>Kabupaten Entry ADT</u>	<u>Table ADT</u>	<u>Difference</u>
Reseal Sealed Road	500	768	268
Gravel to sealcoat	200	500	305
Regravel Gravel	50	124	74
Earth to Gravel	>50	247	197

In other words, a minimum of 500 ADT was required to justify upgrading to a sealed road. The Annex recognizes that such an economic return may not be intended at the kabupaten level, "as considerable emphasis is placed at the kabupaten level...upon road - building as a development tool in geographic areas considered strategic to growth of employment and income".

⁴ Rate of exchange for December 1986, US\$1.00=Rp 1644

Annex H indicates that monitoring should be done and that the types of monitoring suggested are applicable to road links before any road rehabilitation and maintenance takes place, and after a project has been approved by the screening test. They are:

- 1) A pre-screen traffic count, preferably initially by an independent local consulting firm not subject to local pressures, and subsequent traffic counts be taken annually by DPUP or DPUK on road links in each kabupaten having more than 15 motorized vehicles a day;
- 2) Supplementary monitoring surveys, by DPUP/DPUK, to measure other growth indicators than traffic. These would include:

Market price surveys at market or assembly stations, to note tons of cash crop entered per market day or assembly day, for non-motorized traffic only.

On-Farm surveys of cash crop volumes and reported market price, showing the form of non-motorized transport used during main harvest season.

Transporters' price survey, of transporters of goods and passengers over rural roads, to obtain rates charged per ton and per passenger by distance travelled over road links having such motorized traffic.

Project Design Assumptions

The major project design assumptions regarding the economic efficiency of the project are:

- 1) Traffic counts would be taken on all kabupaten roads with traffic over 15 ADT before the project began (in 1987) and annually thereafter; and
- 2) Road condition inventories would be institutionalized and performed on an annual basis to provide a basis for prioritizing rehabilitation and maintenance and, hence, the annual budgets required for maintenance and rehabilitation.

Another major assumption was that the present use of resources was economically inefficient and that changes could be effected by introducing a system of prioritizing infrastructure works based on economic considerations, in this case, for maintenance, traffic counts. Following this assumption was the implied assumption that the kabupaten officials would accept the system and institutionalize it without project conditionality.

An important assumption was the amount of maintenance which could be accomplished in the initial years of the project based on the road condition inventories undertaken by the kabupatens. This assumption takes on some significance as it may have appeared to the kabupatens that USAID was more concerned with implementing rehabilitation (based on USAID's commitment initially to get a network in place which could be maintained) than it was in overseeing their relatively small maintenance effort. With an assumption that only 390 km were maintainable, this suggests that each kabupaten had an average annual requirement for maintenance of about Rp 60 million (US\$36,500 at a rate of exchange of Rp 1,644=US\$1.00).

Another important assumption was that the thrust of the project was to identify a very important network (VIN), the links with the highest traffic, which would become the core network for rehabilitation and maintenance in the project. This is important in that maintenance funding is erratic, and the assumption here was that even at very low levels of funding for maintenance, this core network would receive the highest priority for such funds.

Also, the cost estimates were based on rehabilitating earth roads (poor or bad earth to fair earth). If, as has occurred in the project, the roads were rehabilitated/upgraded mainly to sealed standards, then the average cost per kilometer increases from Rp 35 million (US\$21,300) to Rp 60.1 million (US\$31,600) for South Sulawesi and from Rp 25 million (US\$15,200) to Rp 62.8 million (US\$33,000) for NTT or roughly 48% and a very high 114% respectively.

A final assumption was that the road network to be considered was an existing network with identifiable motorized traffic which would identify the links for major road works and maintenance. There is no indication in Annex H that roads were to be rehabilitated or upgraded where economic potential may exist, but was not proven by some reasonable ADT. This was possibly the single factor which confused the issue of maintenance versus rehabilitation and placed the emphasis on rehabilitating more for the sake of development of the kabupatens rather than for establishing a maintenance of roads system within the kabupatens.

Summary of Project Paper, Annex I, Financial Analysis

Annex I, Financial Analysis, covers four major topics: cost effectiveness of maintenance; recurrent cost requirements; recurrent cost funding availability; and recurrent cost availability for the RRMS project.

The cost effectiveness of maintenance illustrates that the net present value of expenditures/km using a maintenance option at 12% are US\$26,130 over a ten-year road life period, while using a non-maintenance option it is US\$30,429. A savings of some US\$4,300 per kilometer of road.

The conclusions reached for the recurrent cost requirements were: Maintenance funding requirements vary considerably among districts; Variations of these requirements depends on network size, and the surface type and condition of network links; much of the existing networks is not in maintainable condition; Growth of the networks is not systematic and districts do not necessarily control the rate of growth - this creates demands for maintenance or competing demands for rehabilitation which perhaps cannot be anticipated; No flat formula for maintenance funding, such as the 25% earmark under Inpres Dati II, can meet the maintenance needs of all districts - shortages are particularly evident in the Outer Islands.

Recurrent cost funding availability, or road user contributions, are estimated to be inadequate to fully cover expenditures on roads nationwide. However, except for tolls which are collected by the government corporation, P.T. Jasa Marga, these revenues are not reinvested per the incidence of fees or charges collected - Indonesian law prohibits the earmarking of revenues for specific expenditures. The result is that road budgets, including budgets for maintenance, are discretionary and vulnerable to general budget fortunes or policy shifts. Progress in diversifying revenue sources has not significantly changed the pattern in which revenues are concentrated in central as opposed to local government hands.

The revenues collected at the local level amount to about 2.5% of the total district budget - if the property tax is added to this these revenues amount to about 8.5% of the total budget. Only two district taxes relate directly to roads but neither yields significant revenue nationally nor has much potential to do so in the future. Tolls on roads other than on Jasa Marga highways were banned in early 1986 following a series of scandals concerning the illegal diversion of toll receipts.

Annex I points out that a 5% fuel tax would, by itself, yield almost four times the present total of district tax revenues nationwide. If assigned to road maintenance, these fuel tax revenues would total about US\$100 million annually, or more than three times the present value of the Inpres Dati II maintenance earmark of US\$31 million.

Annex I notes that by far the largest and most regular sources of funds for district roads are the Inpres funds. Two of these funds, Inpres Dati II (Inpres District) and Inpres Penunjang Jalan (Inpres Roads), provide more than 90% of the total.

Inpres Dati II uses population as the basis for its allocation which favors the heavily populated islands of Bali and Java which receive about 60% of these funds with only 30% of the nationwide district network (1985/86).

Inpres Jalan was initiated in 1979 primarily to correct the imbalance of Inpres Dati II funds for roads. Over 80% of these funds were programmed for the outer islands in 1985/86. However, there is no formula for its distribution and allocations to individual districts can vary tremendously from year to year.



The most significant difference between the two Inpres funds is that only Inpres Dati II is used for maintenance. Beginning in 1984, each district had to set aside 25% of its budget for maintenance. Because it is based on population, it is the most reliable of the revenue sources for the districts and the most stable for maintenance programs.

In the section on recurrent cost availability for the RRMS project, that the existing maintenance funds will not be sufficient to finance the increased maintenance requirements of rehabilitated roads. The Annex estimates that an additional US\$3.0 million would be required through PACD.

Project Design Assumptions

The major assumption used in estimating the shortfall in maintenance revenue requirements was that the project would rehabilitate about 125 km per district in NTT and 150 km per district in South Sulawesi.

Another major assumption was that for sustainable and efficient road maintenance program using their own resources, there would be no need to change the procedures of budgeting the Inpres funds. That the USAID/Indonesia mission would use the condition precedence for the release of rehabilitation funds to enforce the kabupatens' budgeting for routine maintenance.

ANNEX 2.

PLANT AND EQUIPMENT HIRE SCHEME

5

Annex 2

INDONESIA

PLANT AND EQUIPMENT HIRE SCHEME

A. Introduction:

1. In order to improve the availability of road maintenance plant and equipment for the Kabupatens and private contractors, USAID and GOI are establishing pilot Plant and Equipment Scheme to take over the ownership of heavy equipment and vehicles from the Central Government, and to operate and rent throughout the Kabupatens. The general mechanical condition of units to transferred must be properly assessed to determined units which will effectively operate and generate revenue during the budgetary cycle. An exhaustive diagnostic inspection of each piece of equipment is necessary, using proper testing equipment to determine the mechanical performance of each component and system. An equipment condition survey is require to identify operational reliability, major repairs and overhaul, obsolescence and preventive maintenance programs. This pilot program will be set up by an independent consultant, Associates in Rural Development, Inc.

B. Equipment Condition Survey (Audit):

2. The intent of the condition survey is to establish the relative reliabily of a piece of equipment without dismantling any component by using testing instruments usually produced by the manufacturer for detection of mechanical condition. Evaluations are made by a team of qualified inspectors made up of expert consultant, manufacturer's senior inspector and GOI inspector.

3. The inspection team must rate each component of each piece of equipment using a standardized calibration agreed upon by the survey team (see attached example of a reliability index and criteria). The reliability index of each piece of equipment should indicate which program the equipment should be assigned to according to its general mechanical condition and amount of effort needed to return the equipment or component to its original operating condition. This effort can be best expressed in hours of repair works to classify a particular mechanical intervention according to the level of effort and thus, classifying it as operational or non-operational.

4. The final result of the survey indicates a schedule of equipment to be operated and rented, repaired and overhauled, and surveyed. This schedule describes the operational minor and major repair, and overall budgets and related programs based of the actual condition of equipment or their components.

C. Improved Plant/Equipment Management:

5 In order to reverse the negative trend currently being experienced by Kabupatens management in general, a common terminology has to be developed for the classification of operating condition of a piece of equipment. The terms used will be referred to "Reliability Index." The index identifies the degree of reliability of a given plant based on technical instrumental diagnoses and the level effort to return the plant to its original operating condition. The condition categories will enable Kabupaten management to know the operational integrity of its fleet. This knowledge is essential for planning repairs , overhauls and rental of plant. Thus. inspection (instrumental diagnoses) should be carried out in the immediate future to improvement the present situation.

6 Reliability indexes 5, 4, and 3 identify equipment that can reasonably be used during a budęetary period of one year with an working reliability rate (60-70%) and a relatively predictable breakdown rate for calculating rental revenues. The equipment classified under indexes 2, 1, and 0 would be considered non-operational, and would be scheduled for major repairs, general overhaul, or to be scrapped. Using this classification-condition system, Kabupaten can plan objectively the appropriate utilization of the existing fleet.

7. Most fleet managers mix the various indexes resulting in serious programming defects and low production outputs. The attitude commonly detected among mechanical personnel is roughly translates into "All we need is spare parts" without taking into account the age of the fleet and its operational condition. This single view will be detrimental to the rental system outcome if not corrected by GOI as soon as possible.

8. The rental scheme have largely failed in the past due several underlining shortcoming in the past. The fleet manager has rental revenues based on an overhaul program that lacks a specific definition which has resulted in more or less a very partial overhaul. Partial overhauls normally are lasting less than 2 years of service, far below the expected or projected outcome. Thus, overhaul is "the complete renewal of all wearing parts and surfaces, mechanical and electrical systems that enable the plant/equipment to return to its original operating condition according the manufacturer's specification."

D. Composition of Plant Inspection Team:

9. The fleet managers are faced with the difficult task of planning their plant utilization, replacement and rehabilitation over a period of years to fall within their budgetary and marketing constraints, while still maintaining the fleet at an adequate and competitive level of services. To produce meaningful both short and long range plan for equipment, it,s indispensable to thoroughly diagnose the mechanical condition of each unit by a team of specialist using up-to-date testing instruments to properly assessment all systems and components for their reliability. The following specialists should make up a typical "Condition Survey Team":

- an plant/equipment management specialist (Consultant)with 15 years experience fleet management, condition surveying for performance budgeting equipment programs and rental schemes (2 months);
- a senior plant/equipment inspector (provided by the manufacturer's representative) with 15 years experience in the utilization of testing equipment and procedure for diagnoses fleets and establishing operating, planned repair and rehabilitation budgets (2 months);
- a senior plant/equipment inspector (provided by GOI) with 15 years inspection and diagnostic testing of fleets (2 months);
- an electrical specialist (provided by GOI) with 15 years experience in fleet condition surveys (1 month);
- a maintenance supervisor (provided by GOI) 10 years experience in fleet maintenance operation, planning and budgeting (1 month).

The number of inspection teams is based on the fact that all survey testing and measurements must be collected within one month and the remaining one time is used to prepared the overall Plant Deployment and Repair Plan. The team should pass approximately 4 hours on each plant unit using the manufacturer's checklist and testing procedures. The estimated cost of inspection by manufacturer is between \$4-500 per unit (heavy equipment). This should include travel and consulting costs. The teams should be organized to calibrate the reliability indexes to be used throughout the inspection process. Teams should then be dispatched to locations to complete the data collection and testing within the shortest period of time possible.

E. Conclusion:

10. The above observations indicate a lack of communication and terminology being experienced in the field of fleet management. In order that these lesson come to bear fruit, GOI and ARD management should systemically set aside time to implement these basic inventory management techniques.

11. A very critical stage in the planning of plant and equipment utilization and rehabilitation is the condition survey-feasibility study which to serve two distinct purposes:

- determine if machines are operational, repairable or should be scrapped;
- estimate parts and labor costs and develop price quotation from qualified dealers;

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formulate a plant rental scheme using reliable units for carrying out road maintenance by private contract.

12. The dealer's inspector has to be a highly qualified expert and must be equipped with the latest diagnostic tools. A false diagnosis can have far-reaching consequence. A special allowance for special diagnostic tools and funding of an expatriate expertise should therefore be considered in the monetary envelope for operating a plant hire scheme.

13. The inspection reports will serve as a basis for the dealers to elaborate a quotation: i) number of machines qualifying for rehabilitation or rental; ii) number of non-repairable machine; iii) contract price (flat rate) for rehabilitation; iv) price for machine transportation to workshop; v) duration of repairs/delivery of machine.

ANNEX 3.
CREATION OF A PMAU

Annex 3

CREATION OF A PROJECT MANAGEMENT ACTION UNIT

A. Management System:

The need to implement the proposed Highway Maintenance Management System (HMMS) at the kabupaten level has become evident during the evaluation team's visit to NTT and Sulsel. Progress has been made to varying degrees through the present TA programs at the National levels of Bina Marga and Bangda by introducing guidelines to elements of a management system. It is now necessary to consolidate the efforts from measures already made in this area, and to promote a common system at the Kabupaten level.

There is a still a strong need to develop the effectiveness of the administrative, technical and engineering offices of the Kabupaten in terms of how their human resources are managed and developed. The management practices of road maintenance units and Kabupaten can be greatly enhanced to fully utilize the potential of the staff. Training still suffers from not being performance related, and it is often not directly related to the management systems design that have been developed. Some Kabupatens are showing progress in integrating effective management with performance-based training. It is necessary to build on these experiences, improve them further, and thus improve effectiveness throughout the project Kabupatens.

B. Project Management Action Unit (PMAU):

The PMAU is a Bangda/Bina Marga team whose mission would be to optimize management performance within Kabupaten. PMAU will explore successful practices in selected Kabupatens which could influence its management performance, consolidate these practices, test them and assist other Kabupaten less developed to improve their performance correspondingly.

The PMAU aims at developing a practical road transportation management system and assist Bangda in its implementation and testing at Kabupaten. The PMAU will strengthen Bangda/Bina Marga ability to:

- (a) prepare multi-annual work programs and performance plans based on annual condition road inventories and traffic counts; thus improving the allocation of funds and performance;
- (b) schedule, carry out and control the works within an annual plan by efficiently managing allocated resources for force account and contract works;
- (c) monitor maintenance and other operational costs; other;

- (d) coordinate training programs with real needs identified at Kabupaten levels;
- (e) develop appropriate organizational structures and management practices to fully utilize the potential of its staff;
- (f) operate efficiently road plant and equipment;
- (g) develop an appropriate financial mechanism to assure a continuous and timely flow of funds to the Kabupatens operations.

The PMAU will undertake the following activities:

- (a) Explore existing systems and practices in and collaborate with HQ units and Kabupatens to develop systems and practices which are replicable throughout other Kabupatens;
- (b) Carry out tests in selected Kabupaten;
- (c) Organize inter-kabupaten workshops to present and to discuss the findings related to work accomplishment currently being carried out with success;
- (d) In collaboration with training specialists develop materials and training methods for dissemination to other Kabupaten;
- (e) Assist through management consultancies Kabupaten with setting up and operating the systems and practices;
- (f) Report regularly to the Project Management Steering Committee (see paragraph 7);
- (g) Provide all Kabupaten with up-to-date information on the progress of its work.

The PMAU will include 2-4 full time local staff assigned by different GOI management units. In addition, the PMAU will work with staff from other units and from training institutions on a project basis whenever necessary. The MOPW and MOHA should designate a Team Leader of the PMAU, who will coordinate functions between TA consultants, MOPW and MOHA staff.

The PMAU will report to a Steering Committee to be chaired by the MOHA. The Steering Committee will provide policy support and guidance to the PMAU.

C. Scope of Technical Assistance Support:

Short term consultancy will be needed to coordinate and consolidate efforts already utilized in the selected Kabupaten to achieve sound road maintenance practice, and to train the member of the PMAU. This technical assistance will perform the following tasks:

- (a) review current maintenance practices and procedures and organizational arrangement in the Kabupaten;
- (b) assist in upgrading of the proposed HMMS and EMS;
- (c) assist in defining performance criteria and standards for maintenance activities;
- (d) test and implement a comprehensive maintenance management system to effectively plan, schedule, execute and for control maintenance works carried out by force account and contractors.
- (e) advise on optimizing equipment rental scheme for civil works.
- (f) assist in the development of a simplified Management Information System (MIS) and cost/financial accounting procedures to support the maintenance management.
- (g) Training of MOW, MOH and Kabupaten staff.

D. Staffing of PMAU Team:

The PMAU team would consist of specialists whose assignments to Indonesia would be timed in relation to the phasing of the program. They would intervene in periods of 3 weeks to 2-3 months each time.

The TA team would be coordinated by a TA task manager, who would be working part-time and who would not be based in Indonesia. The TA manager would liaise with the Director for Bangda and Bina Marga. The task manager would have the responsibility for ensuring effective use of the specialists in relation to the needs of MOPW and MOHA.

The international team would include specialists in the following areas:

Management Information Systems and computer applications;

Management and organization development (organization development techniques, organizational structure, communication, leadership, decision making, incentives systems);

- Rural roads maintenance systems;
- Human resources development (career development, training techniques, training program design, training needs, analysis, manpower inventory);
- Prioritization of maintenance work using the World Bank's Highway Design Model III;
- Privatization of maintenance work through increased local contractor's capabilities using OJT and the establishment of a road authority.

The technical assistance will be carried out over a period of two years by the following Specialist:

- i) Management Specialist (Team Leader) with 10 years experience in implementing management systems in the transportation sector at the directorate level (8 months);
- ii) Organizational Development Specialist with 10 years experience at the directorate level (4 months);
- iii) Human Resource Specialist with 10 years experience in training in the transportation sector (3 months);
- iv) Manpower Specialist with 5 years experience in incentive programs (2 months);
- v) Management Information System Specialist with 5 years experience in system development in the transportation sector (2 months);
- vi) Computer Specialist with 5 years experience in selection of hardware and software packages in the transportation sector (2 months);
- vii) Financial Expert with 10 years experience in developing cash flow scheme and accounting systems for the transportation sector (3 months);
- viii) Contract/Privatization Specialist with 10 years experience in the transportation sector (2 months);
- x) Other specialists (6 months).

During the first phase of these specialized consultancy services, TA will concentrate on implementation of systems over a 2 year period; and subsequently, during the second phase TA will monitor the developed management systems. The TA will need a total of 32 months of specialist/months.

E. Schedule and Reports:

The TA will start the first quarter of 1994. The PMAU will establish the following:

- (a) an organizational development plan that delineates the implementation of rural road management systems
 - i) Highway Maintenance Management System (HMMS)
 - ii) Equipment Management System (EMS)
 - iii) Management Information System (MIS)
 - iv) Manpower Database Reporting System
 - v) Cost/Financial Accounting System
- (b) reports on work progress, assessing the adherence to an approved implementation plan;
- (c) manuals and guidelines for the procedures introduced by the Steering Committee, including user manuals for the operation of the computerized systems, issued according to the system development plan; and,
- (d) annual reports, summarizing the work performed and documents prepared by the technical assistance as well as recommendations and guidelines for future development and implementation.

ANNEX 4.
MANAGEMENT INFORMATION SYSTEM

Annex 4

MANAGEMENT INFORMATION SYSTEMS

A. Background:

Decision makers responsible for infrastructure operations and maintenance at the Central GOI and Kabupaten levels are faced with many competing demands. Often, the decisions must be made in a complex political environment. This is especially true when GOI is attempting to decentralize (and thus transfer decision-making authority from the Central Government to Provincial and District government). As a consequence, the current decision-maker (bupatis) have limited managerial skills, experience and resources. They have and will have problems using management data, collecting other appropriate data, and setting budgetary priorities, largely because the analytical techniques and information available to them do not provide accurate and timely feedback about the road network and results of their decision. It is not surprising, then that many less-than-optimal decisions have been made (and are being made) relating to the management of rural roads and relative resources.

Recent rural road management techniques requires cost-effectiveness, economic efficiency in the use of funds and selection of technical standards, and accountability of the management through performance measures and transparent accounting procedures, amongst other things. To achieve these results, reliable, accessible and relevant information is a prerequisite, and modern information technology has made this both possible and affordable.(1)

B. Kabupaten Management Information Systems:

The visit of the Evaluation Team to the project areas revealed how acutely deficient the kabupatens are in maintaining information about their road networks (traffic counts and inventory condition surveys). The type of information which should be readily available, accurate and up-to-date but which is not, indicates that if the information was available, the management skills to exploit the results does not exist yet at lower levels of government. This confirms the necessity to carry out management training at the kabupatens prior to development of Management Information Systems. However, these skills are already being developed under World Bank financing at the Directorate General of Highways (Bina Marga) on national and provincial levels (1) and can be used to replicate a reduced MIS architectural design for the kabupatens.

The Interurban Road Management System (IRMS) is one of four management systems envisaged for Bina Marga, the others being for urban, district and toll roads (2). The IRMS provides an economic approach across central and provincial tiers of authority for the planning, programming, design, budgeting and implementation of expenditures on road betterment and maintenance. In its present form, the IRMS: (i) identifies economically

appropriate maintenance policies and intervention standards for the network, using regularly collected traffic and road condition data; (ii) programs the treatments so as to maximize the economic returns from expenditures within a specified stream of annual budgets; (iii) after field surveys, produces refined engineering designs, accurate cost estimates, revised economic criteria, bills of quantities, and bid documents. While major decisions on budget category, treatment selection and timing are made at the central planning and programming level, the Provincial authorities have to facility to adjust the timing of period maintenance works at the programming stage and to adjust the design at the engineering stage. This decentralizes some decision-making, within centrally-determined technical standards, to the lower levels of government.

C. Conclusions and Recommendations:

Without sound information-estimates of the rural road network requiring rehabilitation, strengthening, betterment, and periodic and routine maintenance is simply not possible for any analyst or decision-maker to develop rational plans, program, or budgets for maintenance programs. This might lie at the heart of the problem of the severe under-appropriation of funds to maintenance-the basis for the requests are weak and the information bases may be suspect. It is not enough to add a percentage increase to last year's request allocation. Information regarding links in the network should cover length, geometry, surface type, base course, subgrade, strength parameters, surface condition, traffic and history.

The review of MIS specifications described in RRMS Project Work Program: Contract Amendment Eleven, lacks the detailed system description needed to develop a relevant rural road management information system in accordance with the present highway management system guidelines outlined by the World Bank publications listed herein. Bina Marga has already acquired skills in the development of IRMS at the national and provincial levels which are indispensable in design of an appropriate kabupaten MIS which has a coherent and common architecture. Thus the MIS Consultant should work closely with Bina Marga and the training consultant develop a pertinent system design.

REFERENCES:

1. "Interurban Road Management System" (IRMS). Final Report and Executive Summary, Technical Advisory Services to BIPRAN on Planning and Programming. Department of Public Works: Jakarta, Indonesia, Dec 1989.
2. "Information System For Road Management: Guidelines on System /design and Data Issues," Technical Paper INU77, Infrastructure and Urban Development Department, World Bank, Washington, DC. 1990.
3. "Road Monitoring for Maintenance Management," Manual for Developing Countries, World Bank/OECD, 1990.

ANNEX 5.
INTERNATIONAL ROAD FEDERATION

INTERNATIONAL ROAD FEDERATION

A. Background:

1. IRF was founded in 1948 to encourage better road and transportation systems worldwide. IRF is a non-profit, non-political service organization which helps in the application of technology and management practices to produce the maximum economical and social return from national road investments. Some 500 governments, companies and associations around the world are members of IRF and provide financial support to the dual offices in Washington, DC and Geneva, Switzerland. National and regional road associations around the world make up the Federation. IRF is an accredited transportation consultant to the United Nations, the Council of Europe, and the Organization of American States, and works closely with other international institutions in the transportation field.

B. Road Transportation Training:

2. The IRF is an international organization representing all professional groups with a major interest in the planning, development and construction of roads and related infrastructure. IRF services at international level include: (i) international representation of inter-governmental bodies; (ii) road project development; (iii) setting up interprofessional contacts and conferences; (iii) organizing congresses, meetings, seminars and symposia; (iv) training and fellowship programs.

3. In addition to organizing long-term academic training programs with national universities of various countries, the IRF has developed two principal programs: (i) a videotape training program and a series of transportation workshops. Both are intended to train highway personnel worldwide, effectively, and at low cost.

4. The videotapes demonstrate basic procedures and practices, not theory, and are accepted in most parts of the world including Asia. The work methods presented in the tapes were analyzed and adapted from many reference materials from developed and developing countries and reviewed by an International Advisory Council and a Local Review Board composed of professionals with extensive highway experience in different regions of the world. Equipment of the same type, but of different makes and models, generally operates the same way wherever it is used, and should be serviced and repaired with standardized methods.

5. Each videotape, termed a videotape module, focuses on a discrete job task and is self-contained. Each module includes an introduction which defines the task to be performed, planning considerations, equipment and materials needed for the job, an



overview of work steps, a detailed step-by-step demonstration of a specific procedure or method, the correct use of tools and a review of work steps. Each videotape module is appropriate for use lone or in combination with others to provide maximum flexibility for the users.

6. The work method or procedure is thoroughly explained by close-up shots of actual work in progress supported by synchronized narration. The task or skill is taught by video rather than audio, and no narrator is shown on video in order to avoid cultural distractions for users in different regions and to enhance the adaptability of the material. Each series of the videotape training library is oriented toward the needs of a specific group of highway personnel. The four series are: (i) Road Maintenance-18 modules; (ii) Equipment Maintenance/Operation-18 modules; (iii) Construction inspection-9 modules; (iv) Cement and Concrete testing-7 modules. The individual titles contained in each series are attached. To encourage the effective use of videotapes, IRF provides train-the-trainer seminars. In addition, 40 videotapes are currently in production and will become available over the next three years.

7. The transportation workshops also have been developed for presentation to personnel of the transportation sector. These workshops are organized into seven series: (i) Transportation Management System-7 courses; (ii) Maintenance Work Methods-18 courses; (iii) Construction Inspection-19 courses; (iv) Highway Maintenance Management-12 courses; (v) Traffic Management/Safety Systems-2 courses; (vi) Equipment Operation-7 courses; (vii) Training Program Design/Management-13 courses. The individual titles contained in each series are attached.

Videotape Training Library

Series 01 - Road Maintenance: 18 Modules

1. Common Maintenance Problems and Cause.
2. Traffic Control During Maintenance
3. Pothole Repair in Asphalt Concrete Pavement
4. Pothole Repair in Surface Treatment Pavement
5. Crack Repair in Asphalt Pavement
6. Repair of Depressions, Rutting and Corrugations
7. Base and Sub-base Repair
8. Single and Multiple Surface Treatments
9. Slurry Seal
10. Patching Unpaved Roads.
11. Smoothing and Reshaping of Earth and Gravel Roads
12. Regravelling
13. Reshaping Earth and Gravel Shoulders
14. Replenishing Earth and Gravel Shoulders
15. Mechanical Cleaning of Unlined Ditches
16. Cleaning of Lined Ditches, Culverts and Catch Basins
17. Cleaning and Clearing of Bridges
18. Concrete Bridge Deck Repair

Series 02 - Equipment Maintenance/Operation: 18 Modules

1. Operator Daily Maintenance of Motorgraders
2. Motorgrader Operation, Part 1
3. Motorgrader Operation, Part 2
4. Articulated Motorgrader Operation
5. Operator Daily Maintenance of Front-End Loaders
6. Front-End Loader Operation, Part 1
7. Front-End Loader Operation, Part 2
8. Operator Daily Maintenance of Crawler Tractors
9. Crawler Tractor Operation, Part 1
10. Crawler Tractor Operation, Part 2
11. Operator Daily Maintenance of Rollers
12. Roller Operation, Part 1
13. Roller Operation, Part 2
14. Operator Daily Maintenance of Asphalt Distributors
15. Asphalt Distributor Operation
16. Operator Daily Maintenance of Dump Trucks
17. Dump Truck Operation

18. Driver Daily Maintenance of Light Vehicles

Series 03 - Construction Inspection: 9 Modules

1. Asphalt Concrete Plant Inspection
2. Asphalt Concrete Paving Inspection
3. Field Sampling and Testing for Bituminous Construction
4. Chip Seal, Prime, Flush and Tack Coat Inspection
5. Inspecting Pavement Recycling
6. Concrete Paving Inspection
7. Major Structures Inspection
8. Incidental Concrete Structures Inspection
9. Field Sampling and Testing for Concrete Construction

Series 04 - Cement and Concrete Testing: 7 Modules

1. Physical Tests of Hydraulic Cement - Fitness Test
2. Physical Tests of Hydraulic Cement - Paste Tests
3. Physical Tests of Hydraulic Cement - Mortar Tests
4. Field Tests for Quality Control of Fresh Concrete
5. Concrete Laboratory Testing 1
6. Concrete Laboratory Testing 2
7. Concrete Laboratory Testing 3

Transportation Workshops

TRANSPORTATION MANAGEMENT SYSTEMS

101. Highway Management Maintenance Systems
102. Maintenance-By-Contract Systems
103. Equipment Management Systems
104. Pavement Management Systems
105. Project Management Systems
106. Pre-Construction Management
107. Construction Management Systems

MAINTENANCE WORK METHODS

201. Common Maintenance Problems and Causes
202. Traffic Control During Maintenance
203. Pothole Repair in Surface Treatment Pavement
204. Pothole Repair in Asphalt Concrete Pavement
205. Crack Repair in Asphalt Pavement
206. Repairing Depressions Rutting and Corrugations
207. Base and Sub-base Repair
208. Single and Multiple Surface Treatment
209. Slurry Sealing
210. Drainage Maintenance
211. Bridge Maintenance
212. Maintenance Mathematics
213. Mechanical Clearing of Unlined Ditches
214. Regraveling
215. Reshaping Earth and Gravel Shoulders
216. Replenishing Earth and Gravel Shoulders
217. Smoothing and Reshaping Earth and Gravel Roads
218. Patching Unpaved Roads

CONSTRUCTION INSPECTION TRAINING

301. Asphalt Concrete Plant Inspection
302. Bituminous Paving Inspection
303. Field Sampling and Testing for Concrete Construction
304. Inspecting Chip Seals, Prime, Flush and Tack Coats
305. Inspecting Pavement Recycling
306. Portland Cement Concrete Paving Inspection
307. Bridge Construction Inspection

- 308. Miscellaneous Concrete Structures Inspection
- 309. Field Sampling and Testing for Bituminous Construction
- 310. Construction Mathematics
- 311. Moisture-Density Testing
- 312. Gradation Analysis
- 313. Grading Preparations
- 314. Contract Plan Reading
- 315. Pipe Placement Inspection
- 316. Flagging for Construction
- 317. Bridge Overlay Inspection
- 318. Cofferdam Inspection
- 319. Traffic Control During Construction

HIGHWAY MAINTENANCE MANAGEMENT

- 401. Crew Scheduling
- 402. Management Flexibility
- 403. Long Range Planning
- 404. Problems in Maintenance
- 405. Activities, Work Units and Classifying Work
- 406. Problems in Planning
- 407. Maintenance Reports and Tables
- 408. Maintenance Performance Standards
- 409. Developing Work Programs
- 410. Maintenance Feature Inventories
- 411. Management-by-Objectives Review
- 412. Budget Preparation

TRAFFIC MANAGEMENT/SAFETY SYSTEMS

- 501. Developing Highway Safety Plans
- 502. Traffic Accident Records Systems

EQUIPMENT OPERATION

- 601. Motor Grader Operation
- 602. Dozer Operation
- 603. Paver Distributor Operation
- 604. Backhoe Operation
- 605. Dump Truck Operation
- 606. Front-End Loader Operation
- 607. Roller Operation

INTERNATIONAL ROAD FEDERATION SIXTH EXECUTIVE CONFERENCE ON ROAD MANAGEMENT

NOVEMBER 8-21, 1992

COORDINATORS: PARKER, RADWAN, ZANIEWSKI

DATE	DAY	TIME	ACTIVITY	PRESENTER
	Sunday	5:00	Orientation	Latta
		6:00	Dinner	Latta
	Monday	8:00	Conference Introduction	Parker
		8:20	Conference Overview and Direction	
			MODULE I-POLICY ISSUES	
		8:40	Key Policy Issues in Road Management	Parker
		9:00	Planning and Financing Roads	Weeks/Hoban/Klagge
		11:00	The Road Deterioration Problem	Hoban
		12:00	Lunch	
		1:30	Managing Road Infrastructure	Paterson/Betz
		3:30	Managing Road Congestion and Safety	Radwan/Hoban
		5:00	Break	
		6:00	Dinner	
			MODULE II-TOOLS FOR ROAD MANAGEMENT	
10	Tuesday	8:00	Pavement Management Systems I: Pavement Evaluation	Zaniewski
		12:00	Lunch	
		1:30	Highway Design and Maintenance Model (Computer applications workshop)	Archondo-Callao/Radwan
		5:00	Break	
		6:00	Dinner	
11	Wednesday	8:00	Pavement Management Systems II: Pavement Management Strategies	Zaniewski
		12:00	Lunch	
		1:30	Maintenance Management Systems I: Condition & Inventory	Fergerstrom
		3:30	Maintenance Management Systems II: Performance Standards	Fergerstrom
		5:00	Break	
		6:00	Dinner	
12	Thursday	8:00	Maintenance Management Systems III: Work Planning & Scheduling	Fergerstrom
		12:00	Lunch	
		1:30	Exercises in PMS (Computer applications workshop)	Zaniewski/Radwan
		5:00	Break	
		6:00	Dinner	
			MODULE III-CASE STUDY	
13	Friday	8:00	Introduction to the Case Study	Parker
		10:30	Case Study-Exercise 1: Setting the Environments; Case Initialization	Coordinators
		12:00	Lunch	
		1:30	Case Study-Exercise 1, Continued	Coordinators
		3:30	Case Study-Exercises 2 & 3: Determining M & R Requirements	Coordinators
		5:00	Break	
		6:00	Dinner	

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INTERNATIONAL ROAD FEDERATION SIXTH EXECUTIVE CONFERENCE ON ROAD MANAGEMENT

COORDINATORS: PARKER, RADWAN, ZANIEWSKI

NOVEMBER 8-21, 1992

<u>DATE</u>	<u>DAY</u>	<u>TIME</u>	<u>ACTIVITY</u>	<u>PRESENTER</u>
4	Saturday	8:30	Case Study-Exercises 2 & 3: Continued	Coordinators
		12:00	Lunch	
		1:30	Free time - Transportation to local mall	
		4:30	Transportation returns from mall	
		6:00	Dinner	
5	Sunday	11:30	Picnic-Delegates, ASU faculty and graduate students	Coordinators
6	Monday	8:30	Case Study-Exercise 4: Expenditure Budgeting	
		12:00	Lunch	
			MODULE IV-RESOURCES FOR ROAD MANAGEMENT	
		1:30	Equipment Management I: Procurement	Plew/Scott
		3:30	Equipment Management II: Utilization & Maintenance	Plew/Scott
		5:00	Break	
		6:00	Dinner	
7	Tuesday	8:30	Materials Management I: Location & Inventory	Hamm
		10:30	Materials Management II: Economic Utilization	Hamm
		12:00	Lunch	
		1:30	Field Trip-Arizona DOT Headquarters	Delton/Zaniewski
		5:00	Break	
		6:00	Dinner	
8	Wednesday	8:30	Human Resources Development I: Strategic Role of Training	Jorgensen
		10:30	Training Case Study	Jorgensen
		12:00	Lunch	
		1:30	Discussion of Training Case	Jorgensen
		4:00	Human Resources Development II: Technology Transfer	Betz
		5:00	Break	
		6:00	Dinner	
			MODULE V-IMPLEMENTATION & POLICY	
9	Thursday	8:30	Road Policy and Economic Development	Betz
		10:30	Implementation of Road Management Systems	Ahlstrom
		12:00	Lunch	
		1:30	Implementation of Road Management Systems, Continued	Ahlstrom
		3:30	Implementation of Training Programs	Ahlstrom
		5:00	Break	
		6:00	Dinner	
10	Friday	8:30	Presentation and Discussion of the Case Study	Delegates
		12:00	Lunch	
		1:30	Afternoon Free	
		6:00	Dinner Presentation of Certificates	

W.S.

ANNEX 6.
SUSTAINABILITY ANALYSIS

Annex 6

SUSTAINABILITY ANALYSIS

- I. THE DISTRICT ROAD EQUIPMENT WORKSHOP
- II. THE CONTRACTORS
- III. LATE PAYMENTS
- IV. THE LOCAL TRAINING COURSES
- V. THE INSTITUTIONS INVOLVED
- VI. LOCAL MAINTENANCE RESOURCES
- VII. CONFUSED DEFINITIONS
- VIII. TENDER PROCUREMENT
- IX. RUPIAH FUND AVAILABILITY
- X. FURTHER ACTIVITY
- XI. CONTINUATION OF THE PROJECT

I. THE DISTRICT ROAD EQUIPMENT WORKSHOP

In all of the kabupaten workshops there are two kinds of road equipment ownership:

1. Owned by the central/provincial government, and the use of equipment is on rental basis, it needs permission from the Bina Marga provincial office. The rental price is based on provincial government regulation, fixed rate in Rp/km. Relatively cheaper than the ones owned by the district.

This equipment was originally from the O E C F project. The rental fee will go to the central government treasurer.

2. Owned by the district government. To rent the equipment need only the district office permission and the rental price based on the Bupati's regulation. Rental price is Rp / hour, and subject to change annually. It is more expensive compared to the first group.

The second group of equipment is most from the USAID projects. The rental fee will go to the district treasurer.

Since road equipment is important for rural road maintenance, the condition of the workshop must be good. It can be achieved through:

A. Single ownership of equipment:

To increase the effectiveness of decentralization at the district level, the provincial road equipment must be transferred as soon as possible to the district level, so that the workshop unit will have a solid equipment policy. As a matter of fact, the later the transfer of road

equipment will cause the heavier the burden of the district workshop, since the road equipment can no longer be used and the operational cost will also be higher.

B. Increase district income:

Since it will be known that the equipment will only be owned by the district, than the rental cost will only go to the district treasurer, and it will increase the district income that can be authorized by the Bupati (based on existing regulations) for the purpose of workshop equipment maintenance.

C. Workshop management;

The workshop activity is starting to use the equipment maintenance system produced by the USAID project.

The management of the workshop is under head of the district public works (DPUK), who is responsible directly to the Bupati.

D. Skilled Technicians:

As a matter of fact, this is lacking in all of the workshops. Since salary is too low, the skilled technicians will always go to the private sectors.

The number of technicians is less than 20. There are training activity within these two years for the workshop technicians.

The rental cost will meet the workshop operational cost. If the efficiency of management will increase, hopefully the workshop will become a self supporting unit.

II. THE CONTRACTORS.

At present the project is only conducting road rehabilitation, and most of the contractors involved in these projects are A and B-1 categories.

Later, if the project will funds a portion of the maintenance activity, it is planned that more involvement will be called for of local people. Then the qualification of contractors should be more open to the lower categories, B-2 and C.

The advantages of using lower categories contractors are :

A. More local people will be involved in road maintenance, which means more people will feel responsibility for the local roads.

B. The execution of the projects will be more transparent, since many contractors will be involved.

C. Spreading of income distribution for both sides, government as well as private sector, is much better:

(1) More technicians of the local district offices will be involved as technical supervisors.

(2) Increasing the atmosphere of free competition in the private sectors.

(3) Technical skill training on road maintenance as well as project administration and management will be needed for both, government officials, as well as the contractors.

(4) The local contractors will rent equipment from the district road equipment workshop. It means that it will generate or increase district income, since the rental cost of road equipment will go to the district treasurer.

D. This means that the decentralization at the district level, which is very slow, will be faster, leading to real local participation.

III. LATE PAYMENTS.

There are many complaints from the contractors as well as the Bupatis concerning payments for road construction, after they have finished the work partially, as well as final payment;

1. The contractors feel the contracts are arranged between the Bupati and the contractors. However, if there is any stagnation of payment, they can not sue the Bupati. Not the same as regular work given by the bupati, they can sue the bupati right away.

2. If the installment payment is late, the contractors will also slow down the process of road construction, and this effects the performance as well as the quality of the road.

3. It is very strange that the payment has to be done in Jakarta, rather than in the provincial city through any bank that has a central office in Jakarta.

4. What then is the significance of road certification in the location, so that the process will be fast. However the approval for the payment must be in Jakarta and it will slow the process.

5. In NTT, there are payments that have been one month late since the first installment, and totalling about Rp.250.000.000. Since the contractor uses bank money with an interest rate of 2 % per month, the slow payment process causes the contractor a financial loss of Rp.5.000.000,- or more.

The request from the contractors and agreed also by the Bupatis, is that:

1. It might be possible for the approval of payment from USAID to be arranged in the provincial level, e.g. the USAID mission officer visit provincial offices routinely.
2. The money for the payment could be kept in a provincial bank, so that the contractors won't have to go to Jakarta.
3. If #1 and #2 can be conducted, it will become an example of good and real realization of the decentralization process.

IV. THE LOCAL TRAINING COURSE.

During our visit in NTT as well as in south Sulawesi, there are instructors who conduct the training in the district road equipment workshop. It seems that this training is part of the central Bangda activity.

The instructors consist of two parties ;

1. Those that are sent by the central Bangda. They came from the private sector that has been contracted by central Bangda. These instructors give technical training to the workshop technicians. Their involvement is about 60%
2. Those that are sent by the provincial public works (Province Bina Marga) there are government technicians. These instructors give the procedural process and workshop administration, using Bina Marga as well as Bangda manuals; involvement is about 40%.

The subject of workshop training is covering:

1. Road maintenance.
2. Equipment maintenance.
3. Equipment operation.
4. Road construction/rehabilitation supervision.

The system of transferring knowledge in these activities is on the job training (OJT);

1. 40% is classical.
2. 60% is in the field/practices.

The participants are less than 10 persons and this must be an intensive training.

However, since most participants are workshop technicians and still have the responsibility for their routine work, it is not seldom that they have to leave the training course and do their routine work, or are even disturbed by their family's daily life problems.

Since training in equipment maintenance will be very important for having a self sufficient work shop unit, some improvement has to be made:

A. To guarantee the continuing process of this kind of training, the involvement of the technical school (Fakultas Teknik or Fakultas Polyteknik) of the provincial university will play an important role. If the university does not pay attention to this matter, then the project will have to find an alternative from the private sector:

(1) the local NGO'S who conduct technical courses in Ujung Pandang and Kupang.

(2) the branch office or the dealer (or sub dealer) of a certain product of road equipment.

B. The participants in these kinds of training course must also come from the private sector, especially the category of B-2 and C contractors. Then both sides, the government technicians as well as the contractors will have the same knowledge and good understanding of each other.

C. To have a better atmosphere in the training course (participants will more seriously follow the course), several steps can be taken:

(1) the participants should take the course not in their own workshop, but in other district workshops in the vicinity of where they live. This will eliminate the disturbance of routine activities.

(2) The participants should be given pocket money that will cover

1- transport cost.

2- the cost of meal, twice/day.

3- some money for the family.

(3) There must be a tough evaluation and the result will influence their next promotion (career system).

D. It might be considered to send abroad the district public work people to see how rural road maintenance functions as a decentralized activity in other countries.

V. THE INSTITUTIONS INVOLVED.

The main goal of this project is building institutions which will be capable in rural road maintenance.

Rural road maintenance is part of decentralization, which is conducted by the district public works (DPUKs).

Ministry of home affairs is the institution that is responsible for the decentralization and coordination process of sectoral/ technical development in the country, as well as region wide.

Bangda is the office that is assigned by the ministry of home affairs to conduct the coordination of development at the provincial as well as the district level.

Bappenas is the national institution that guides the loans and grants that come to the country, since every development based on loan and grant will be published by Bappenas through the blue book. The counterpart funds that follow those loans and grants will also be considered by Bappenas through the national planning and budgeting process.

Ministry of public works is a sectoral department responsible from the standpoint of technical aspects of construction.

Bina Marga is the office that is assigned by the ministry of public works to give technical guidance in rural road construction and maintenance.

Beside that, Bina Marga is also responsible for the:

- (1) Development and rehabilitation as well as maintenance of national road system.
- (2) Guidance of development and rehabilitation as well as maintenance of provincial roads.

District public works (DPUK) is responsible to the Bupati; the District Head is not directly responsible to provincial public works (Bina Marga Propinsi). The head of the district public works is assigned by the district (Kabupaten).

At the provincial level, there are provincial officers appointed by the governor as liaison officers to the central Bangda office.

At the district level, there are also district officers appointed by the Bupati as liaison officers to the provincial Bangda office.

For the RRMS project it has already been justified that:

1. At the National level, Bangda is the counterpart of the donor.
2. At the provincial level the Bappeda I (Provincial planning unit) will channel the project to the district.
3. At the district level the Bupati (District Head) will be responsible for execution of the project.

VI. LOCAL MAINTENANCE RESOURCES.

The standards for local roads (rural roads, district/Kabupaten roads, which are the DPUKs' responsibility to maintain), have to be described specifically.

If a local road is constructed from earth, or even from gravel, maintenance might be possible using the gotong-royong (voluntary mutual work) system, although the system will be more feasible in densely populated regions than in sparsely populated areas.

If we consider that local road are only paved roads, asphalted as well as cemented, than the gotong-royong system will not work for the maintenance of the rural road.

Maintenance of paved road needs some skill as well as some funds. As a matter of fact, gotong-royong is only a system of contributing man power, labor force. That is why DPUKs use the "swakelola" (force account) system for local roads when they are only "semi paved", pay the labor, put in some skill, plus minimum funds. The result is a kind of rural road that can be driven around 10 - 15 km/hour.

The maintenance of rural roads of good/fair standards, which will cost about 2½ up to 3 million rupiah per km. need to be done by people who have skill in road maintenance. It is better that it be given to the private sector of C or B-2 categories. The maximum contract might be for 10 - 20 kilometers, but they must be responsible for the whole 12 months/year.

The sources of funds for rural road maintenance, come from:

1. Impres DT II, which can be used for road maintenance up to 20/30% from the total impres DT II.
2. Impres jalan, which can also be used to 25% (minimum of 250 million rupiah).

Other sources are from:

- increase in land prices (through land and building taxation).
- gas and oil taxation.

Both are dependent on the central government policy, they can not be solved at the provincial any more than at the district level.

Hopefully, when the time comes, the dependency of district funds from the central government will decrease, and the proportion of land taxation and other taxes for the district will increase.

Based on DFM team findings in their special studies (March 1991), other sources of funds for local road maintenance are from:

1. Road user charges; they can be adopted on high traffic links.
2. Crop cess method; it will be applicable if around the road link there are many factories and agribusiness products.

VII. CONFUSED DEFINITIONS.

A decision has to be made first regarding the confused definitions of:

- road reconstruction
- road rehabilitation
- road betterment or improvement
- road maintenance

Additionally, a distinction has to be made between the terms highway and road, based on Indonesian terminology and agreed upon by Bina Marga and Bangda, also USAID and the consultant involved.

What are the objectives of the Rural Road Maintenance Systems Project? Will it be limited to road construction per se, or institution building leading to decentralization of activities so as to require local participation ?

If we choose local participation through strengthening the decentralization institution, then road maintenance can be used as a means.

However, if our purpose is to enhance participation through decentralization, but we choose road rehabilitation, the consequence will be to lift the arena not to the district, but even higher. Then we get to the problems:

A. Since road rehabilitation needs a large amount of funds and has to be implemented by A and B-1, contractors, the tender process has to be taken to a higher level than the district (even up to the central government).

B. Bina Marga feels that Bangda overstepped its authority, since Bangda manages the tender procurements on road rehabilitation for RRMS, while most IBRD and ADB road projects tender through Bina Marga.

C. It is understood that the responsibility of Bangda is to coordinate development activities in the region. However, in the province/district the commander of development is the Governor/ Bupati (Presidential decree No. 5/1974).

D. It has been asked if the bureaucratic and centralized system displayed by USAID in this project is part of their basic nature?

E. What is the role of the consultant? Do they know what they have to do? Are they mixed up? It seems that the consultant is not strong enough to convince and explain to the district level authorities the real nature of this RRMS project.

The RRMS project activities should have taken place at the lowest governmental level, but in fact, most of the bureaucratic processes, especially concerning decisions, were lifted up to some higher level. This situation slowed the progress in project development and caused delays.

The project is not completely a failure, there are many achievements and signs of progress, not all of which are quantifiable,

- two envelope tendering system
- road equipment maintenance system
- roads that are already rehabilitated reaching \pm 300 km
- training and education of the DPUK technicians
- several important studies that have been conducted
- job opportunities for people

VIII. TENDER AND PROCUREMENT SYSTEM.

One of the RRMS products is the two envelope system in the tendering process, which is shown in video film. This system is not in contradiction to the GOI tender and procurement method (Kepres 29/1984).

The two envelope system gives a more detailed explanation and is leading to an objective way in selecting the most reliable contractors.

The usage of this two envelope system will be distributed to other districts, since Bangda feels that the system is in line with the existing method.

Just recently Bangda introduced the two envelope system to the Indonesian contractors Association (Gapensi), and they will bring up the system as a material in proposing to the government for the improvement of Kepres 29/1984

IX. RUPIAH FUNDS AVAILABILITY.

The GOI fiscal year starts on the 1st of April and lasts until March 31. However, since funds are not available until the 1st of June the GOI budget is effective only for 10 months.

If tenders for road maintenance start after the 1st of June, the period of work will also decrease by another 2 months, leaving only 8 months available. At the same time, the rainy season in parts of the project area start about October/November/December. It is concluded that the effective working period in the field will be only about 3 - 5 months for every fiscal year.

This situation will bring consequences such as:

1. During the beginning of the rainy season, much of the labor force, will work in their own fields, specially in the rice growing areas.
2. The condition of the roads to be maintained will not be dry but muddy.
3. It will require heavy mobilization of road equipment during a short period (there are idle periods of equipment, as well as expensive rentals).
4. The work of road maintenance becomes unattractive for the contractors, or they will charge higher fees.

To solve this problem, it is proposed:

1. The tender process can be started right away, as soon as the DIP has been delivered to the district. The tender process does not need to wait until the funds are available.
2. The scheduled of USAID payments must be timely. For the USAID project, as a matter of fact, the need for rupiah funds ($\pm 20\%$) will follow after the payment from the donating agency ($\pm 80\%$). That is why tremendous delays of payment on the side of the donating agency, may cause the refusal of payment from the GOI side (the rupiah funds can not be held more than 10 months, terminating on March 31 every year).

They have to wait until the following fiscal year, then the contractor will suffers an interest penalty on capital.

3. For this kind of project, use a two year budgeting system.
4. Change the fiscal year to start on 1st January and last till 31st December.

X. FURTHER ACTIVITY.

There are several activities that can be carried out during the remaining period of the project's life.

A. Conduct more training on the subjects of:

1. Workshop management and equipment maintenance.
2. District road maintenance.
3. Strengthening the knowledge of decentralization and local participation.

B. Pilot projects on:

1. Routine district road maintenance, including more involvement of C and B-1 contractors.
2. Periodic district road maintenance, including more involvement of B-1 and B-2 contractors.
3. Management and operation of equipment workshops.

C. Several studies on:

1. Gotong-royong on earth and gravel road maintenance.
2. Local Resource Mobilization (LRM): road user charges.
3. LRM: crop cess method.

D. Campaign on:

"The importance of local road maintenance responsibility by public participation" through film and discussions.

XI. CONTINUATION OF THE PROJECT.

The RRMS project needs to be continued for at least another 3 to 4 years, that is to say an extension of 1 to 2 years beyond the present termination date.

The reasons are:

1. The project itself started late by more than 2½ years.
2. Bangda realizes that this project can be used as a means to strengthen decentralization leading to better autonomy.
3. Bappenas is still looking for an effective method of rural road maintenance.
4. This project is pioneering a new system, which later other donor agencies will follow and use the results of this method.
5. Using up the remaining funds.
6. etc.

ANNEX 7.
LOCAL RESOURCE MOBILIZATION

I. KABUPATEN PINRANG

A. General Discussion of the Road and the Project

Road Link No. 04 runs from the *kabupaten* capital of Pinrang to the coastal village of Langnga, a distance of 16.1 km. The economy of the road service area at the coast is based on marine fishing and brackish water (*tambak*) shrimp and fish production; inland, the economy is based on irrigated rice production. Six kilometers of the road were recently rehabilitated through the USAID RRMS project and are in good, maintainable condition. The remaining 10.1 km are currently being rehabilitated and should be finished by the end of this fiscal year. Traffic along the road includes various sizes of trucks transporting shrimp to market and shrimp fry to *tambak* farmers, small vehicles transporting captured ocean fish, public transportation (mini-vans), heavy trucks carrying equipment for the current *tambak* upgrading and expansion project in Langnga, private motorcycles, and a limited number of private cars and pickups. During the harvest season (twice annually), the traffic flow increases with the addition of trucks to carry harvested rice and harvest workers.

The pilot project will collect user fees on the road to offset maintenance costs. Fees will be collected from all vehicles that pass by a single collection post on the road, with the fee schedule determined by the *kabupaten*. The rationale underlying this pilot is that all of the various road users receive an economic benefit from road improvements and therefore will be able to contribute a portion of such benefits to ensure that they continue (through road maintenance).

B. Administrative and Legal Issues

This pilot project will augment the current practice of collecting fees for overweight trucks on the same road link. The current fee, *dispensasi jalan*, is collected unevenly and does not provide significant revenues for the *kabupaten*. Trucks subject to this fee do not contribute an amount equal to the monetary value of damage to the road surface resulting from their excess load.

The proposed pilot fee would require payment for all motorized traffic use, to be collected at a single collection post located at the roadside. *Dipenda (Dinas Pendapatan Daerah Kabupaten Pinrang)* will be responsible for collecting payments and depositing them in the *kabupaten* government revenues account.

Because strict earmarking of revenues for specific expenditures is not allowed for in the current *kabupaten* budgeting system, a mechanism must be determined to guarantee that (1) road-user fees are used only for maintenance to this road link and administrative costs, and (2) sufficient funds are expended on maintenance of this link to ensure that benefits of good road conditions continue.

The recommended mechanism is a *Perda* (*Peraturan Daerah*, or *Kabupaten* Regulation) that (1) states that a certain amount of funds will be allocated annually for maintenance of the Pinrang-Langka road link, (2) prescribes procedures for collecting road user fees, including a fee schedule, (3) authorizes funding for administration of fee collection, and (4) mandates that collections in excess of the amount required for routine maintenance in a given year be transferred to a *Dinas PU Dati II* account for use on future periodic or routine maintenance on this road link.

Additional personnel will be required to work as collectors on the post. These can be hired on a nonpermanent basis, as is common practice for collectors working for *Dipenda*. Full-time coverage (24 hours per day, 7 days per week) is recommended due to the traffic patterns, which include heavy shipments at all hours of the day. The pilot should include a monitoring component to determine the most efficient collection schedule.

A coordinating committee is recommended, because the pilot project will involve several *kabupaten* agencies. The agencies involved will include *Dipenda* (fee collection); *Bagian Keuangan*, *Sekretariat* (budget and expenditures); *Bagian Pembangunan*, *Sekretariat* (development coordination); and PU (maintenance activities). The *kabupaten* will determine the composition of the coordinating committee. It will likely include the above agencies along with the *sekwilda* (*kabupaten* secretary), and the *bupati*.

C. Funding Needs

Annual funding needed to administer the pilot project is estimated in Table 1. These amounts must be made available in a project *Daftar Isian Proyek* (DIP, or List of Approved Projects) for fiscal year 1991/92. One-time costs for 1991/92 are indicated with an asterisk (*). All other funding needs will be recurring. Funding needs are divided into administration and road maintenance; administration funds should be contained in a project DIP to be administered by *Dipenda Dati II*, and road maintenance funds in a DIP administered by PU *Dati II*.

The *kabupaten* should allocate funds for 1991/92 activities with the understanding that full collection of fees for the first year of the project will be unlikely until collection administration is established. In future fiscal years, expenditures will be offset more completely by revenues from fee collections. Potential revenues are discussed in the case study report.

TABLE 1

COSTS ASSOCIATED WITH PILOT PROJECT IN KABUPATEN
PINRANG

	<u>Annual Cost (Rp)</u>
Administration	
<u>Honorarium</u>	
Coordinating committee (<i>Panitia Koordinasi Proyek</i>)	
6 committee members @ Rp. 40.000/month	2,880,000
Project Leader (<i>Pimpro</i>) @ Rp. 40.000/month	480,000
Project Treasurer (<i>Benpro</i>) @ Rp. 30.000/month	360,000
<u>Salaries</u>	
4 Collectors @ Rp. 75,000/month	3,600,000
<u>Capital Items</u>	
* Collector Post	1,800,000
* Office Equipment	150,000
<u>Administration</u>	
Office Supplies @ Rp. 20,000/month	240,000
Receipt Books-numbered	<u>200,000</u>
	9,710,000
Road Maintenance	
<u>Honorarium</u>	
Project Leader (<i>Pimpro</i>) @ Rp. 40,000/month	480,000
Project Treasurer (<i>Benpro</i>) @ Rp. 30,000/month	360,000
<u>Maintenance Activities</u>	
6 km @ Rp. 2,8 million/km/yr	16,800,000
** 10 km @ Rp. 1 million/km/yr 1991/92	10,000,000
*** 10 km @ Rp. 2,8 million/km/yr 1992/93++	<u>(28,000,000)</u>
1991/92	27,640,000
1992/93++	(45,640,000)
* one-time only expense	
** 10 km of road completed 1990/91 will need only minor maintenance in 1991/92.	
*** 10 km of road will require standard maintenance beginning 1992/93.	
SOURCE: Computed by authors after consultation with GOI officials.	

D. Technical Assistance

The following technical assistance is recommended in order to ensure the success of the project.

1. Assistance in procuring government agreement at all levels for the project mechanisms, including:
 - a. preparation of *Peraturan Daerah (Perda)* by the *bupati*, with the assistance of *Dipenda, PU, Keuangan (Sekretariat)*;
 - b. approval of *Perda* by DPRD II;
 - c. review of *Perda* by the provincial government, assisted by *Biro Bina Bangda and Sekretariat Dati II*;
 - d. provincial approval of *Perda* (by the Governor).
2. Assistance in establishing the collection system, including determination of a fee schedule.
3. Assistance in developing a monitoring and evaluation system for collections.
4. Assistance in monitoring and evaluation during the first stages of administration of the collection system.
5. Coordination and liaison with other USAID consultant(s) working on the RRMS project.
6. Assistance in establishing coordination and management of the pilot, especially coordination between the collection system component and the road maintenance component.

II. KABUPATEN SIDRAP

A. General Discussion of the Road and the Project

Road Link No. 10 runs from the provincial road north of the town of Rappang to the boundary with Kabupaten Pinrang, a distance of 12 km. Beyond this, in Pinrang, the road continues, but the surface is earth rather than asphalt as in Sidrap. The economy of the road service is primarily dependent on nonirrigated rice production, with minor inputs from other commodities such as cocoa. The average income level is lower than in areas such as Pinrang, which produce irrigated rice and high-yield products such as shrimp. Traffic on the link is low, consisting mainly of public transport mini-vans and other small vehicles carrying cargo or passengers. Rice production is limited to one harvest per year, and yields are low due to the lack of irrigation. Thus, high season (during the harvest) traffic is neither heavy nor frequent.

No significant quantifiable economic benefits were identified by the field team. Perception of the benefits of road improvement on the part of the general local population, on the other hand, is high. Local residents expressed interest in contributing to maintenance in order to continue to enjoy these benefits.

Because monetary contributions by local residents sufficient to provide for road maintenance would be too heavy a burden, the pilot in Sidrap will use contributions of labor by local residents, who constitute the most significant user group for this road link. The villagers will perform a limited range of maintenance activities, such as patching of potholes and cleaning of shoulders and drainage ditches.

B. Administrative and Legal Issues

The user groups will consist of residents in the three villages (two *desas*, one *desa persiapan*) along the road. As explained in the case study, the primary beneficiaries of road maintenance are Desa Kulo and Desa Persiapan Maddendra. These will be the primary participants. Villagers in Desa Rijang Panua will have more limited involvement because of the shorter distance of the road in their village. They will contribute labor periodically, as organized by the LKMD in each village. This work will be coordinated with other road maintenance activities carried out by PU *Dati II*, with the assistance of a PU field supervisor (*Petugas PU Kecamatan*) who is already employed by PU *Dati II*. This field supervisor can help direct, motivate, and coordinate LKMD activities. The village head, as head of the LKMD, will be directly responsible for managing LKMD efforts.

We recommend that materials for road maintenance, such as asphalt, sand, and gravel for pothole patching be (1) provided by PU through the road maintenance project, (2) stored at the village offices, and (3) used under the direction of the various village heads as road maintenance needs are identified by villagers, the LKMD, and the field supervisor.

It should be noted that villagers in the area are already performing such road maintenance activities as cleaning of ditches and shoulders. This pilot recommends expanding these activities to include other activities, such as pothole patching, to be determined by the head of PU. These activities should be carried out regularly, along the entire length of the road link, in conjunction with an annual routine maintenance project carried out by PU *Dati II*.

The recommended mechanism for establishing the pilot project is a *Surat Keputusan Bupati* (SK *Bupati*, or Decision Letter) that (1) stipulates that a certain amount will be allocated annually for the maintenance of Road Link No. 10, (2) prescribes procedures for the establishment of an ongoing voluntary (*gotong-royong*) road maintenance assistance program to be carried out by the LKMDs in the three villages along the road, (3) prescribes procedures for coordination between annual PU-managed and LKMD-managed road maintenance programs on the road link (including the role of the village head, the *camat*, LKMD, *Dinas* PU, and the field supervisor) and the provision of materials by PU to LKMDs, and (4) establishes criteria for program monitoring and evaluation.

No additional personnel will be required for the project. The goal of the project is to provide additional labor inputs through community participation in order to reduce the cost of routine road maintenance. Current *kabupaten* personnel to be involved in the pilot will include the PU field supervisor (*Petugas PU Kecamatan*), other PU employees responsible for road maintenance, and the *camat* of the *kecamatan* involved. In addition, the village heads and LKMD members in the three pilot project villages, who are not civil servants, will be involved in project administration.

A coordinating committee should be considered to oversee the project and direct monitoring, evaluation, and expansion activities. Possible membership on the committee would include *Dinas* PU; *Bagian Pembangunan*, *Sekretariat*; and the *camat*. The *kabupaten* will determine the composition of the coordinating committee.

C. Funding Needs

Annual funding needs to administer the pilot project are shown in Table 2. These amounts need to be made available in a project DIP for fiscal year 1991/92. All funds shown are recurring annual funds. Funding needs are divided into administration and road maintenance. These should be contained in separate project DIPs to be administered by *Dinas* PU *Dati II*.

D. Technical Assistance

The following technical assistance is recommended in order to assure the success of the project:

1. Assistance in procuring government agreement for the project mechanisms, including
 - a. preparation of the SK *Bupati* (Decision Letter) establishing the program and coordinating committee, with assistance of PU, *Sekretariat*, *camat*, and *kepala desa*;
 - b. approval of the program plan and signature of SK by the *bupati*.
2. Assistance in establishing the maintenance coordination program, including administrative assistance to the village organizations involved.
3. Assistance in developing monitoring and evaluation systems for the coordination and labor mobilization aspects of the program.
4. Assistance in developing monitoring systems for tools and materials provided by the PU to the villages.
5. Assistance in monitoring and evaluation during the first stages of the maintenance program.
6. Coordination and liaison between various levels of government and with other USAID consultants working on the RRMS project.

TABLE 2		
COSTS ASSOCIATED WITH PILOT PROJECT IN KABUPATEN SIDRAP		
		<u>Annual Cost (Rp)</u>
Administration		
<u>Honoraria</u>		
Coordinating Committee (<i>Panitia Koordinasi Proyek</i>)		
6 committee members	@ Rp. 40,000/month	2,880,000
Project Leader (<i>Pimpro</i>)	@ Rp. 40,000/month	480,000
Project Treasurer (<i>Benpro</i>)	@ Rp. 30,000/month	<u>360,000</u>
		3,720,000
Road Maintenance		
<u>Honoraria</u>		
Project Leader (<i>Pimpro</i>)	@ Rp. 40,000/month	480,000
Project Treasurer (<i>Benpro</i>)	@ Rp. 30,000/month	360,000
<u>Maintenance Activities</u>		
12.5 km @ Rp. 2 million*		<u>2,500,000</u>
		25,840,000
<p>*The per-kilometer funding needs are calculated on the basis of a 28 percent discount for labor contributed, deducted from the standard figure of Rp. 2.8 million per km for routine maintenance. According to project documents from Kabupaten Pinrang, the value of unskilled labor accounts for 28 percent of the budget.</p>		
<p>SOURCE: Computed by authors after consultation with GOI officials.</p>		

III. KABUPATEN BONE

A. General Discussion of the Road and the Project

Road Link No. 58 extends for 4 km from the provincial road at Bulu-Bulu to the coast at Bone Lampe. The road is primarily used to transport shrimp fry from the hatchery located at the coast. A small population of fishermen in the coastal settlement of Bone Lampe also use the road, although both the volume and the value of products transported along the road are dominated by those from the hatchery.

Maintenance of a good link to the provincial road is vital for the success of the hatchery, which is considering the construction of a new road to assure this link. As an alternative, the hatchery manager has expressed an interest in contributing to the maintenance of the existing road, if good conditions can be guaranteed.

The pilot project involves developing and implementing a mechanism to channel monetary contributions from the hatchery to road maintenance projects. In light of the hatchery's dominant role, no additional contributions from the local population are being considered for the pilot.

B. Administrative and Legal Issues

Three methods for collecting and allocating funds were considered in the case study report:

1. execution of road maintenance directly by the hatchery;
2. fees collected from the hatchery based on production and allocated to annual *kabupaten* road maintenance projects, and;
3. annual lump-sum payments from the hatchery allocated to annual *kabupaten* road maintenance projects.

The team recommends the first mechanism for the following reasons:

1. The hatchery has the strongest interest in maintaining the road in good condition and perceives net economic benefits from such expenditures.
2. Road maintenance by the hatchery would result in a net increase in expenditures for maintenance of *kabupaten* roads without additional allocations of funds or manpower on the part of the local government.
3. Benefits would accrue to other users of the road, such as local residents, without additional government expenditures.

4. Administrative costs would be minimized.
5. Linking road maintenance to economic benefits in this manner eliminates competition for scarce funds.
6. *Kabupaten* officials support the establishment of this mechanism.

The pilot should be established via SK *Bupati*, which would include the following provisions,

1. The *kabupaten* agrees that the hatchery will be responsible for maintaining the road link and is empowered to carry out activities necessary to maintain the road.
2. The *kabupaten* and hatchery company agree that the road will be maintained by the hatchery on a regular basis.
3. Free access to the road is guaranteed for all persons and vehicles up to acceptable weight limits.
4. A monitoring and evaluation system shall be established, including a regularly scheduled review of the terms of agreement.

The *kabupaten*, represented by the *sekwilda*, should enter into discussions as early as possible with the owners and manager of the hatchery firm to establish the terms of agreement. In addition, the local DPRD (*kabupaten* assembly) will be consulted to agree to this procedure.

C. Funding Needs

This pilot will require no funding by the *kabupaten* government other than that for a coordination committee as in the other *kabupatens*. The total annual expense for this board will consist entirely of honoraria for the members of the coordinating committee. The *kabupaten* will determine agencies to be represented on the committee. These will likely include PU and the *Sekretariat* (*sekwilda* and Development Section).

It is estimated that the annual cost of routine maintenance for the hatchery would total Rp. 2.8 million/km or Rp. 11.2 million for the 4-km link. Periodic maintenance is estimated at Rp. 15 million/km once every five years, annualized to Rp. 12 million per year for the link. With regular routine maintenance, it is likely that this latter figure will be lower.

ANNEX 8.

SUMMARY PROGRESS REPORT A/O 31 AUGUST 1993

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RURAL ROAD MAINTENANCES SYSTEMS
SOUTH SULAWESI AND NTT ROAD REHABILITATION
SUMMARY PROGRESS REPORT AS OF 31 AUGUST 1993

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KABUPATEN	IFY	LOCATION	LINK NO	KM	TOTAL CONTRACT AMOUNT (Rp)	Cost/Km	ADT	% Non Motorized	ERR	RE-EVALUATION		STATUS
										ADT	ERR	
TAKALAR	88/89	Aeng Batu batu-Galesong Selatan	36/38/40/41	13.000	302,896,000.00	23,299,692	1171/1526/1392	8.5/8.3/8.7	-			REPROGR 84/85
	89/90	Burane-Bt.Kanang	34/35	4.500	205,624,000.00	45,694,222	597/644	14.9/18.0	-			FINISHED
	90/91	Pattalasang-Cilalang	25	6.000	568,906,000.00	94,817,667	-	-	-			FINISHED
	90/91	Bt.Kassi-Bt.Ramba-Campagaya	29/33	4.000	201,067,000.00	50,266,750	522	13.98%	-			FINISHED
	91/92	Kunjung-Tonasa	29	4.550	296,132,000.00	65,083,956	713	16.97%	13.4%			FINISHED
	92/93	Bantinoto-Cekura	17	5.920	442,805,000.00	74,798,142	1222	13.20%	81.5%			JUST TENDERED
	92/93	Cakura-Lantang	15	3.676	712,565,000.00	70,986,750	406	18.20%	26.8%			JUST TENDERED
	92/93	Lantang-Malolo	07	6.362			586	22.90%	45.0%			
	92/93	Pakkaba-Julumata-Kalukuang	DK35/10	2.062	263,437,000.00	32,683,825	55	27.30%	18.7%			JUST TENDERED
	92/93	Balang-Lakalongpulau	DK35/21	3.000			88	10.20%	13.8%			
	92/93	Tanringmata-Popo-Br.mamase	DK35/22	3.000			52	58.00%	12.5%			
93/94	Malolo-Borongmamisi	14	8.000	893,000,000.00	76,058,257	255	11.40%	28.2%			JUST TENDERED	
93/94	Pabundukang-Bantinoto	19	3.741			198	6.10%	20.4%				
TOTAL KABUPATEN				67.811	3,886,492,000.00							
JENEPONTO	88/89	Tanetea-Barobbo	24/31	13.500	381,027,000.00	28,224,222	16	62.50%	-	143		FINISHED
	89/90	Belokallong-Embo	87	7.525	601,693,000.00	79,959,203	-	-	-			FINISHED
	90/91	Tolo-Bontorappo	141	7.850	348,077,000.00	44,341,019	-	-	-			FINISHED
	91/92	Allu-Marayoka	30	7.500	390,540,000.00	52,072,000	-	-	17.1%			UNDER CONSTR.
	92/93	Patontongan-Embo	87	14.640	875,832,000.00	59,824,590	131	25.19%	14.6%			JUST TENDERED
	92/93	Gantarang-Bontolebang	146				113	7.08%	13.5%			
	92/93	Pokokbulo-Palambuta	72	8.000	416,634,000.00	32,297,209	189	9.52%	21.6%			JUST TENDERED
	92/93	Jombe-Manggepong	90	4.900			25	0.00%	3.5%			
	93/94	Monro-monro-Tamanroya	82	10.550	894,640,000.00	84,800,000	421	6.41%	42.2%			JUST TENDERED
	93/94	Balandangan-Maero-Joko	59/70	4.362	305,360,000.00	70,004,585	519	8.09%	27.7%			JUST TENDERED
TOTAL KABUPATEN				78.827	4,213,803,000.00							
BULUKUMBA	88/89	Kasuara-Barabba	29	11.150	390,850,000.00	35,053,812	1501	13.59%	-			FINISHED
	88/89	Palampang-Balimbing	41				265	27.55%	-			
	89/90	Teko-Lajae	01	2.895	342,429,000.00	118,282,902	686	18.08%	-			FINISHED
	89/90	Barabba-Br.Rappoa	30	6.000	351,726,000.00	58,621,000	420	8.81%	-			UNDER CONSTR.
	90/91	Sapiri-Gattareng	31	10.680	760,329,000.00	71,191,854	808	3.34%	-			FINISHED
	92/93	Barabba-Br.Rappoa	30	5.000			417	6.71%	78.7%			
	92/93	Ganjenge-Ujungloe	02	12.000	564,357,000.00	26,495,634	277	27.44%	22.5%			JUST TENDERED
	92/93	Palampang-Palangisang	46	4.300			189	17.99%	13.8%			
	93/94	Sapiri-Gatareng	31	7.600	833,000,000.00	79,333,333	808	3.34%	81.8%			JUST TENDERED
	93/94	Kasuara-Br.Rappoa	30	2.900			417	6.71%	74.2%			
TOTAL KABUPATEN				62.525	3,242,691,000.00							

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KABUPATEN	IFY	LOCATION	LINK NO	KM	TOTAL CONTRACT AMOUNT (Rp)	Cost/Km	ADT	% Non Motorized	ERR	RE-EVALUATION			
										ADT	ERR	STATUS	
PINRANG	88/89	Pinrang-Kateon	10	10.000	477,927,000.00	47,792,700	1005	2.29%	-			FINISHED	
	89/90	Pinrang-Jampue	13	3.750	281,992,000.00	75,197,867	725	6.48%	-			FINISHED	
	89/90	Katteong-Langka	10	6.078	334,145,000.00	54,976,143	103	20.39%	-			FINISHED	
	90/91	Pinrang-Cempa	07	12.270	641,697,000.00	52,298,044	426	2.82%	-			FINISHED	
	91/92	Pinrang-Benteng	04	8.600	493,257,000.00	57,355,465	688	3.20%	47.9%			FINISHED	
	91/92	Pinrang-Malimpung	01	8.300	423,443,000.00	51,017,229	604	5.63%	38.8%			FINISHED	
	92/93	Barugae-Lanisang	14	12.300	839,978,000.00	68,290,894	142	14.08%	42.1%			UNDER CONSTR	
	92/93	Pinrang-Jampue	13	3.810	261,557,000.00	68,650,131	725	6.48%	85.7%			UNDER CONSTR	
	93/94	Malimpung-Benteng	03	8.500	620,991,000.00	73,057,765	232	9.05%	21.2%			JUST TENDERED	
	93/94	Barang-Tosulo	12	6.550	437,009,000.00	66,718,931	119	19.33%	17.5%			JUST TENDERED	
	TOTAL KABUPATEN				80.158	4,811,996,000.00							
	TOTAL PROVINCE (SOUTH SULAWESI)				476.877	26,410,508,000.00							
KUPANG	89/90	Oelmasi-Bipolo (Road)	K-45	11.000	823,080,000.00	74,825,455	-	-	-			FINISHED	
	89/90	Oelmasi-Bipolo (Bridge)	K-45	-	105,147,000.00	-	-	-	-			FINISHED	
	90/91	Oesao-Noekele	K-21	6.600	553,000,000.00	83,787,879	-	-	-			FINISHED	
	90/91	Oelmasi-Bipolo (Road)	K-32	10.300	742,301,000.00	72,068,058	-	-	-			FINISHED	
	90/91	Oelmasi-Bipolo (Bridge)	K-32	-	242,670,000.00	-	-	-	-			FINISHED	
	91/92	Kukak-Barate	K-35	9.000	546,592,000.00	60,732,444	-	-	-			FINISHED	
	92/93	Kukak-Barate	K-35	10.000	624,421,000.00	62,442,100	415	44.82%	15.9%			UNDER CONSTR	
	92/93	Barate-Manubelon	K-36	10.000	568,000,000.00	56,800,000	647	49.61%	70.9%			UNDER CONSTR	
	93/94	Oekabii-Oemoro	K-02	10.000	625,000,000.00	62,500,000	328	28.35%	46.7%			JUST TENDERED	
	93/94	Barate-Manubelon	K-10	10.000	725,000,000.00	72,500,000	682	44.72%	66.8%			JUST TENDERED	
	TOTAL KABUPATEN				76.900	5,555,211,000.00							
	BELU	89/90	Webua-Wemasa	K-10	10.250	619,991,000.00	60,486,927	-	-	-			FINISHED
91/92		Webua-Wemasa	K-10	9.750	718,400,000.00	73,682,051	-	-	-			FINISHED	
91/92		Weliman-Biuduktoho	K-04	10.000	499,201,000.00	49,920,100	-	-	-			FINISHED	
92/93		Rainino-Kaputu	K-01	9.000	546,750,000.00	60,750,000	284	17.25%	35.8%			UNDER CONSTR	
92/93		Lalu-Rusan	K-18	18.000	497,250,000.00	27,625,000	122	28.69%	16.9%			UNDER CONSTR	
93/94		Rainino-Kereana	K-01	5.700	375,000,000.00	65,789,474	280	22.14%	42.4%			JUST TENDERED	
93/94	Lahurus-Rusan	K-18	9.100	525,000,000.00	57,692,308	155	40.00%	27.2%			JUST TENDERED		
TOTAL KABUPATEN				71.800	3,781,592,000.00								
TOTAL PROVINCE (NTT)				148.700	9,336,803,000.00								
TOTAL PROJECT				625.577	35,747,311,000.00								

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KABUPATEN	IFY	LOCATION	LINK NO	KM	TOTAL CONTRACT AMOUNT (Rp)	Cost/Km	ADT	% Non Motorized	ERR	RE-EVALUATION		
										ADT	ERR	STATUS
SINJAI	88/89	Lita-Bulupodo	15	11.800	421,168,000.00	35,692,203	521	7.29%	-			FINISHED
	88/89	Saukang-Panaikang	01				-	-	-			
	88/89	Korong-Patongko	05				120	35.00%	-			
	89/90	Bikeru-Puncak	30	1.980	140,106,000.00	70,760,606	122	42.62%	-			FINISHED
	89/90	Lita-Bulupodo	15	6.770	420,080,000.00	62,050,222	-	-	-			UNDER CONSTR.
	90/91	Pattalassang-Panaikang	11	6.000	605,800,000.00	100,966,667	-	-	-			FINISHED
	90/91	Panaikang-Sanjai-Bua	2/3	6.000	418,998,000.00	69,833,000	213	15.49%	12.7%			UNDER CONSTR.
	92/93	Bontopeda-Karumasing	25	9.200	731,354,000.00	79,495,000	263	4.94%	43.2%			UNDER CONSTR.
	92/93	Manimpahoi-Pepara	50				209	17.22%	12.7%			UNDER CONSTR.
	92/93	Korong-Bua	06	22.300	583,647,000.00	26,172,511	77	3.90%	18.6%			
	92/93	Jatie-Lappae	46				294	6.12%	22.5%			
	92/93	Lappae-Mananti	08				216	4.17%	19.2%			JUST TENDERED
	93/94	Barambang-Batubelerang	27	2.000			260	6.54%	24.3%			
	93/94	Karumasing-Bijinangka	41	6.900	893,000,000.00	81,926,606	114	2.63%	15.2%			
93/94	Bikeru-Puncak	23	2.000			106	14.15%	13.2%				
TOTAL KABUPATEN				74.950	4,214,153,000.00							
BONE	89/90	Watampone-Palette	30	2.000	134,067,000.00	67,033,500	659	6.22%	-			FINISHED
	89/90	Bajoe-Panyula	31	4.283	247,750,000.00	57,844,968	227	6.17%	-			FINISHED
	89/90	Biru-Pattirobajo	35	12.250	960,756,000.00	78,429,061	400	5.00%	-			FINISHED
	90/91	Bajoe-Kading	32	4.381	302,360,000.00	69,015,206	416	28.85%	-			FINISHED
	90/91	Watampone-Palette	30	10.105	769,553,000.00	76,155,666	659	6.22%	-			FINISHED
	91/92	Waempubbu-Pompanua I	01	3.643	141,965,000.00	38,969,256	-	-	-			FINISHED
	91/92	Pattirobajo-Benteng	42	5.210	371,833,000.00	71,369,098	886	5.19%	50.3%			FINISHED
	91/92	Waempubbu-Pompanua III	01	8.554	495,578,000.00	57,935,235	386	25.91%	41.8%			FINISHED
	93/94	Waempubbu-Pompanua II	01	11.360	884,987,000.00	77,903,785	307	13.03%	48.5%			JUST TENDERED
	93/94	Koppe-Taretta-Waempubbu	13	7.000	503,013,000.00	71,859,000	364	12.09%	17.5%			JUST TENDERED
TOTAL KABUPATEN				50.426	3,423,862,000.00							
SIDRAP	88/89	Mano-Kulo-Kp.Baru	04/32	12.600	512,495,000.00	40,674,524	469	10.66%	-			FINISHED
	89/90	Sarawatu-Bila	29	9.000	417,000,000.00	46,333,333	387	2.33%	-			FINISHED
	89/90	Padangloang-Oting	24	8.000	399,700,000.00	49,962,500	444	4.73%	-			UNDER CONSTR.
	90/91	Lanrang-Aka akae	40	6.720	437,477,000.00	65,100,744	140	22.86%	-			FINISHED
	92/93	Lanrang-Bulo-Cipotakari	27/02-34	15.860	850,835,000.00	53,646,595	539	11.50%	15.5%			UNDER CONSTR.
	92/93	Tannutedong-Dongi					393	6.62%	26.5%			UNDER CONSTR.
	92/93	Simpo-Abokongeng	05	10.000	497,716,000.00	49,771,600	512	4.10%	30.3%			
	92/93	Pangkajene-Empagae	01				438	28.08%	91.8%			
	93/94	Aka-akae-Empagae	40	5.200	462,724,000.00	88,985,385	140	22.86%	34.1%			JUST TENDERED
93/94	Takalasi-Buae-Alakuang	14,15	7.600	505,276,000.00	66,483,684	129	15.50%	13.4%			JUST TENDERED	
TOTAL KABUPATEN				62.180	2,617,511,000.00							

24 & 31

TRAFFIC ANALYSIS FORM

Kabupaten : JENEPONTO YEAR : 1988/89
 Link Name : TANETEA - BAROBBO Link No. : 24 & 31
 Count Site : _____ Km From : _____ Length : 13.5
 Location : _____ (ADJ)

TRAFFIC COUNT	NON MARKET DAY	MARKET DAY	AVERAGE OF TWO COUNTS	24 HOUR COUNT	4 - WHEEL EQUIVALENT ADJUSTMENT FACTOR	ADT
DATE DURATION START OF COUNT END	(a)	(b)	(c)	(d)	(e)	(f)
MODE OF TRAVEL	12 HOUR COUNT	12 HO COUN	(a)+(b)	(d)=1.28(c)		(d)x(e)
1 Pedestrian	35	56	46	58	0.041	2
2 Pikul/Headload	4	13	9	11		0
3 Bicycle(Pass)	2	9	6	7	0.086	1
4 Bicycle(Freight)	4	2	3	4		0
5 Becak	0	0	0	0	0.4	0
6 Cart	5	19	12	15		6
1-6 Sub Total	50	99	75	95		10
7 Motorcycle	9	10	10	12	0.17	2
8 Pick-up (pass)	2	2	2	3	1.27	3
9 Pick-up (freight)	1	0	1	1	0.96	1
10 Bus	0	0	0	0	1.87	0
11 Light Truck	0	0	0	0	1.38	0
12 Medium Truck	0	0	0	0	2.4	0
13 Heavy Truck	0	0	0	0	2.82	0
14 Car/Jeep	0	0	0	0	1.23	0
15	0	0	0	0	1.28	0
				3	Total	4

Enter line totals in Form TP-D Column (a)

Total 8 -15 ----

Factor to Expand Current Count to Mid-Year Value Growth Rate

Rate	Factor
1%	1.05
2%	1.10
3%	1.16
4%	1.22
5%	1.28
6%	1.34
7%	1.40
8%	1.47
9%	1.54
	1
	1.47

Enter

X 16

Use this figure to select column in Table 1 & Table 3

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KABUPATEN	JENEPONTO	EXISTING ROAD	PROPOSED	#	24 & 31
LINK NO.	24 & 31	Earth	Earth		
		Telford	Telford		
NAME	TANETEA - BAROBBO	Gravel	Gravel		
		Paved	Paved	1	
LENGTH	13.5				
		Bad	Bad		
		Poor	Poor		
		Fair	Fair		
		Good	Good	1	
		GRADIEN	GRADIENT	1	

M O D E	EXISTING ROAD		PROPOSED		TOTAL DAILY OPERATING COST SAVINGS (Rp/Km)
	24 HR TRAFFIC VOLUME	MODAL OPERATING COST (Rp/Km)	MODAL OPERATING COST (Rp/Km)	DAILY OPERATING COST SAVINGS PER MODE	
	(a)	(b)	(c)	(e) = (c)-(d)	(f) = (a)x(e)
1. Pedestrian	58	54	54	0	0
2. Pikul (head load)	11	115	115	0	0
3. Bicycle(Pass)	7	71	24	47	331
4. Bicycle(Freight)	4	75	25	50	192
5. Becak	0	192	61	131	0
6. Cart (animal)	15	104	95	9	138
7. Motorcycle	12	86	33	53	644
8. Pick-up (Pass)	3	589	214	375	960
9. Pick-up (freight)	1	444	173	271	173
10. Bus	0	921	308	613	0
11. Light Truck	0	644	240	404	0
12. Medium Truck	0	1046	389	657	0
13. Heavy Truck	0	1231	478	753	0
14. Car/Jeep	0	535	197	338	0
			Daily Oper. Cost Savings		2,439
			x365= Annual Savings/km		890,250

$$\text{Annual Cost Savings/km} \times \text{Length of Project (km)} = \text{Annual Proj. Cost Savings}$$

$$0.890 \times 13.50 = 12.018$$

ERR CALCULATION (ESTIMATED ADT)

KABUPATEN : JENEPONTO

LINK NO.	LINK NAME	LENGTH (KM)	CONST. TYPE		ADT	PROPOSED			CASH FLOW										IRR (%)	NPV	
			Current	Proposed		TOTAL COST	1ST YEAR BEN.	G.R (%)	1	2	3	4	5	6	7	8	9	10			
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)	(u)	(v)
24&31	Tanetea - Barobbo	13.500	G - 1	Paved	16	381.027	12.018	8	-381.03	12.9794	14.0178	15.1392	16.3504	17.6584	19.0711	20.5967	22.2445	24.024	25.946	0.0%	-282.1

Table 3 A

24 & 31 TRAFFIC ANALYSIS FORM

Kabupaten : JENEPONTO YEAR : 1992/93
 Link Name : TANETEA - BAROBBO Link No. : 24 & 31
 Count Site : _____ : _____ Km From : _____ Length : 13.5
 Location (ADJ)

TRAFFIC COUNT	NON MARKET DAY	MARKET DAY	AVERAGE OF TWO COUNTS	24 HOUR COUNT	4 - WHEEL EQUIVALENT ADJUSTMENT FACTOR	ADT
DATE DURATION OF COUNT	(a)	(b)	(c)	(d)	(e)	(f)
MODE OF TRAVEL	12 HOUR COUNT	12 HO COUN	(a)+(b) 2	(d)=1.28(c)		(d)x(e)
1 Pedestrian	52	92	72	92	0.041	4
2 Piku/Headload	8	14	11	14		1
3 Bicycle(Pass)	11	23	17	22	0.086	2
4 Bicycle(Freight)	9	19	14	18		2
5 Becak	0	0	0	0	0.4	0
6 Cart	8	16	12	15		6
1-6 Sub Total	103	234	126	161		14
7 Motorcycle	33	53	43	55	0.17	9
8 Pick-up (pass)	12	28	20	26	1.27	33
9 Pick-up (freight)	5	8	7	8	0.96	8
10 Bus	5	7	6	8	1.87	15
11 Light Truck	6	11	9	11	1.38	15
12 Medium Truck	4	7	6	7	2.4	17
13 Heavy Truck	3	6	5	6	2.82	16
14 Car/Jeep	11	17	14	18	1.23	22
15	0	0	0	0	1.28	0
				83	Total	126
			Total 8-15 ----		8-15 --	
Factor to Expand Current Count to Mid-Year Value Growth Rate	Factor				Total	149
					1-15 --	
1%	1.05					
2%	1.10					
3%	1.16					
4%	1.22					
5%	1.28					
6%	1.34					
7%	1.40					
8%	1.47					
9%	1.54					
	1					
	1.47	X	149			

Enter line totals in Form TP-D Column (a)

Use this figure to select column in Table 1 & Table 3
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Table 3 B

AFTER REHABILITATED # 24 & 31

EXISTING ROAD

JENEPONTO

KABUPATEN

LINK NO.	NAME	LENGTH	EXISTING ROAD	JENEPONTO	KABUPATEN	AFTER REHABILITATED #
24 & 31	Tanetea - Barobbo	13.5	Earth Telford Gravel Paved			1
			Bad Poor Fair Good			1
			GRADIEN			1

M O D E	EXISTING CONDITION		AFTER REHABILITATED		TOTAL DAILY OPERATING COST SAVINGS (Rp/Km) (f) = (cxd) - (exb)
	24 HR TRAFFIC VOLUME (year'88)	MODAL OPERATING COST (Rp/Km)	24 HR TRAFFIC VOLUME (year'92)	MODAL OPERATING COST (Rp/Km)	
1. Pedestrian	(e) 58	(b) 54	(c) 130	(d) 54	3888
2. Pikul (head load)	11	115	58	115	5405
3. Bicycle (Pass)	7	71	61	24	967
4. Bicycle (Freight)	4	75	41	25	725
5. Becak	0	192	0	61	0
6. Cart (animal)	15	104	36	95	1906
7. Motorcycle	12	86	191	33	5271
8. Pick-up (Pass)	3	589	29	214	4439
9. Pick-up (freight)	1	444	14	173	1978
10. Bus	0	921	0	308	0
11. Light Truck	0	644	13	240	3120
12. Medium Truck	0	1046	4	389	1556
13. Heavy Truck	0	1231	3	478	1434
14. Car/Jeep	0	535	20	197	3940
				Daily Oper. Cost Savings x365 = Annual Savings/Km	34,629
					12,639,439

Annual Cost Savings/km x Length of Project (km) = Annual Proj. Cost Savings

12.639 x 13.50 = 170.632

06-Oct-83

ERR CALCULATION (REAL ADT)

CABUPATEN : JENEPONTO

LINK NO.	LINK NAME	LENGTH (KM)	CONST. TYPE		ADT	PROPOSED		CASH FLOW										IRR (%)	NPV			
			Current	Proposed		TOTAL COST	1ST YEAR BEN.	G.R (%)	1	2	3	4	5	6	7	8	9			10		
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)	(u)	(v)	
4231	Tantelea - Barobbo	13.500	G - 1	Paved	149	381.027	170.632	8	-381.03	184.283	199.025	214.947	232.143	250.714	270.772	292.433	315.828	341.094	368.382		55.1%	1023.59

RURAL ROADS MAINTENANCE SYSTEMS PROJECT, 497-0353

FINANCIAL STATUS SUMMARY (US \$000)

AS OF SEPTEMBER 29, 1993

BUDGET LINE ITEM	LOP BUDGET	CURRENT OBLIGATION	CURRENT EARMARK	CURRENT COMMITMENT	CUMULATIVE EXPENDITURES	UNEXPENDED (PIPELINE)
		(1)	(2)	(3)	(5)	(1 - 5)
GRANT						
1 ROAD REHABILITATION	18,550.0	7,127.1	5,931.6	1,717.8	851.6	6,275.4
2 ROAD MAINTENANCE	0.0	0.0	0.0	0.0	0.0	0.0
3 WORKSHOPS	0.0	0.0	0.0	0.0	0.0	0.0
4 EQUIPMENT	5,758.7	1,800.0	1,328.5	95.2	111.8	1,688.2
5 EQUIPMENT MAINTENANCE	0.0	0.0	0.0	0.0	0.0	0.0
6 TRAINING	1,510.0	810.8	664.6	664.6	42.0	768.8
7 SPECIAL STUDIES	1,500.0	1,500.0	574.6	565.0	492.3	1,007.7
8 TECHNICAL ASSISTANCE	17,000.0	17,300.5	15,373.9	14,850.6	13,277.9	4,022.6
9 PLANNING & MONITORING	100.0	100.0	0.0	0.0	0.0	100.0
10 EVALUATION/AUDIT	300.0	300.0	188.2	166.9	50.0	250.0
11 CONTINGENCY/INFLATION	500.0	0.0	0.0	0.0	0.0	0.0
SUBTOTAL	45,218.7	28,938.4	24,061.5	18,060.2	14,825.7	14,112.7
LOAN						
1 ROAD REHABILITATION	7,050.0	7,050.0	6,557.9	6,512.1	5,216.1	1,833.9
2 ROAD MAINTENANCE	0.0	0.0	0.0	0.0	0.0	0.0
3 WORKSHOPS	750.0	750.0	407.5	329.1	308.9	441.1
4 EQUIPMENT	1,241.3	1,241.3	1,082.3	1,082.3	1,077.3	164.0
5 EQUIPMENT MAINTENANCE	0.0	0.0	0.0	0.0	0.0	0.0
6 TRAINING	590.0	590.0	590.0	590.0	347.1	242.9
7 SPECIAL STUDIES	0.0	0.0	0.0	0.0	0.0	0.0
8 TECHNICAL ASSISTANCE	0.0	0.0	0.0	0.0	0.0	0.0
9 PLANNING & MONITORING	150.0	150.0	0.0	0.0	0.0	150.0
10 EVALUATION/AUDIT	0.0	0.0	0.0	0.0	0.0	0.0
11 CONTINGENCY/INFLATION	0.0	0.0	0.0	0.0	0.0	0.0
SUBTOTAL	9,781.3	9,781.3	8,637.7	8,513.5	6,949.4	2,831.9
LOAN AND GRANT COMBINED						
1 ROAD REHABILITATION	25,600.0	14,177.1	12,489.5	8,229.9	6,067.8	8,109.3
2 ROAD MAINTENANCE	0.0	0.0	0.0	0.0	0.0	0.0
3 WORKSHOPS	750.0	750.0	407.5	329.1	308.9	441.1
4 EQUIPMENT	7,000.0	3,041.3	2,410.8	1,177.5	1,189.1	1,852.2
5 EQUIPMENT MAINTENANCE	0.0	0.0	0.0	0.0	0.0	0.0
6 TRAINING	2,100.0	1,400.8	1,254.6	1,254.6	389.1	1,011.7
7 SPECIAL STUDIES	1,500.0	1,500.0	574.6	565.0	492.3	1,007.7
8 TECHNICAL ASSISTANCE	17,000.0	17,300.5	15,373.9	14,850.6	13,277.9	4,022.6
9 PLANNING & MONITORING	250.0	250.0	0.0	0.0	0.0	250.0
10 EVALUATION/AUDIT	300.0	300.0	188.2	166.9	50.0	250.0
11 CONTINGENCY/INFLATION	500.0	0.0	0.0	0.0	0.0	0.0
TOTAL	55,000.0	38,719.7	32,699.1	26,573.7	21,775.1	16,944.6

Table 5

93/94 Road Maintenance Programs
Summary for South Sulawesi and NTT
September 6, 1993

Kabupaten	Km in Program			Km Kab Tot Good/ Fair	% In Pgm Good/ Fair	Pro- gram Cost (000)	Total Inpres Dati II (000)	% In Pgm Inpres Dati II	Pgm Cost/ Km (000)	RRMS Completed Rehab		
	Good/ Fair	Poor/ Bad	Total							Km in Kabu- paten	Km In Pgm	% In Pgm
Takalar	17.0		17.0	154	11	223,314	1,066,646	21	13,136	10.5	0.0	0
Jeneponto	97.2		97.2	136	71	375,522	1,502,648	25	3,863	28.9	28.9	100
Bulukumba	48.0	38.3	86.3	163	29	518,722	1,717,139	30	6,011	22.8	13.7	60
Sinjai	42.6	0.5	43.1	190	22	250,000	1,000,000	25	5,800	16.6	10.7	64
Bone	61.9	28.5	90.4	358	17	557,682	3,039,114	18	6,169	36.3	36.3	100
Sidrap	16.7	9.4	26.1	121	14	272,493	1,185,782	23	10,440	28.3	0.0	0
Pinrang	87.1	18.4	105.5	178	49	433,018	1,615,187	27	4,104	19.9	19.9	100
South Sulawesi	370.5	95.1	465.6	1,300	29	2,630,751	11,126,516	24	5,650	163.3	109.5	67
Kupang	97.6	11.8	109.4	442	22	682,179	2,843,314	24	6,236	36.9	29.6	80
Belu	26.2		26.2	153	17	279,902	1,118,896	25	10,683	30.0	15.0	50
NTT	123.8	11.8	135.6	595	21	962,081	3,962,210	24	7,095	66.9	44.6	67
Total	494.3	106.9	601.2	1,895	26	3,592,832	15,088,726	24	5,976	230.2	154.1	67

ANNEX 9.
DOCUMENTS CONSULTED

Annex 9

DOCUMENTS CONSULTED

- AMCHAM:** Special Report Cost of Living and Working in Indonesia, Report of the Cost of Living Committee, Bulletin No. 27 -December 1993.
- Associates in Rural Development, Inc.:** Contractor Performance Special Study, December 1990.
- Ibid** Rural Roads Maintenance Systems Policy: District Equipment Policy Study, Final Report, Annexes One-Three, April 1993.
- Ibid** Rural Roads Maintenance Systems Project, Special Study on Local Resource Mobilization for Road Maintenance, Volumes I, II, and III, March 1991.
- Economic Development Institute, World Bank:** The Road Maintenance Initiative, Building Capacity for Policy Reform, Volumes 1, 2, and 3, 1991.
- Globetrotters:** A Spreadsheet Analysis Computer Model for the Simplified Screening Table, Main Report, May 1989.
- Ibid** Part B: Simplified Screening Table, Cost Model Data, Kabupaten Roads Rehabilitation and Maintenance Costs, Sulawesi Selatan, May 1989.
- Government of Indonesia Ministry of Public Works Ministry of Home Affairs:** Technical Guidelines, Planning and Programming of Kabupaten Roads, IBRD Rural Roads Development Project, July 1990.
- Government of Indonesia Kabupten Kupang** Kecamatan DLM Angka Cetak Tahun 1991 Dari Tiat2 Kecamatan.
- Ibid** Memori Pertanggungjawaban Akhir Jabatan Bupati Kepala Daerah Tk II Kupang.
- Ibid** Rencana Pembangunan Tahunan Kabupaten Tk II Kupang.
- Government of Indonesia, Kabupaten Pinrang:** Daftar Proyek IPJK Bantuan USAID, Kabupaten Dati II, 15 September 1993.
- Ibid** Keputusan Bupati Kepala Daerah Tingkat II Pinrang, Nomor: 40 - Tahun 1993, Tentang, Penetapan Besarnya Retribusi Dispensasi Pemakaian Jalan Dan Sistim Pelaksanaannya.

- Ibid Rekapitulasi, Proyek-Proyek Pemeliharaan Jalan Kabupaten Dari T.A. 1989/1990 S/D 1994/1995, 20 September 1993.
- Government of Indonesia, Kabupatens Bone, Bulukumba, Jeneponto, Pinrang, Sidrap, Sinjai, Kupang, and Belu:** Rencana Tahunan Pemeliharaan Jalan Kabupaten, RRMS - USAID (497-0353), Years 1988/89 through 1993/94.
- STV/Lyon Associates, Inc.:** Assessment Report, Local Resource Mobilization (LRM), March 1992.
- Ibid The Calculation of Internal Rate of Return (IRR) and Net Present Value (NPV), April 1993.
- Ibid Inventarisasi Kelengkapan Jalan Raya Dan Petunjuk-Petunjuk Survey Kondisi Jalan, December 1991.
- Ibid Letter, Subject: Dana Biaya Umum Untuk Survey & Design Proyek IPJK Bantuan USAID Tahun 1991/1992, dated 9 July 1990, from Guillermo Cortes, Project Team Leader to Drs Syahrul Sahrudin, Karo Bina Bangda Prop. Tk. I Sulsel.
- Ibid Letter, Subject: Approved Link Discrepancies, dated June 20, 1990, from Sergio De La Fuente, Chief of Party, to Mr Fred M. Pollock, Project Officer, USAID.
- Ibid Memorandum, Subject: Discrepancies and Lack of Coordination, dated May 31, 1990 from M. Misaelidis, Transport Economist to Mr. S. De La Fuente, COP.
- Ibid Methodology for Selecting/Scheduling Highway Improvement Projects, October 1991.
- Ibid Progress Reports, Kabupaten Road Maintenance Program, July 1993, August 1993, September 1993
- Ibid Road Rehabilitation: Progress Report for Periods Ending July 31 and August 31, 1993.
- Ibid Progress Report, Road Rehabilitation, Progress Report for the Period Ending August 1993.
- Ibid A Proposal for Spare Parts and Equipment Procurement (Revised), Text and Appendices, August 1991.
- Ibid RRMS Project Work Program: Contract Amendment Eleven, Revision 03, August 1993.

- Ibid Rural Roads Maintenance System, Road Rehabilitation, Summary of the Project 31 August 1993, South Sulawesi.
- World Bank, Asia Region:** Staff Appraisal Report Indonesia Highway Sector Project October 23, 1989.
- World Bank:** World Bank Support for Rural Roads Maintenance, Philippine Case Study, April 20, 1989.
- Ibid "Interurban Road Management System" (IRMS) Final Report to BIPRAN on Planning and Programming Department of Public Works, Jakarta.
- Ibid "Information System For Road Management:" Guidelines on System Design and Data Issues, Technical Paper INU77, Infrastructure and Urban Development Department, World Bank, Washington, DC, 1990.
- Ibid "Road Monitoring for Maintenance Management" Manual for Developing Countries, World Bank/OECD, 1990.
- Ibid "The Road Maintenance Initiative: Building Capacity for Policy Reform, Carapetis, Levy, and Wolden, 1991.
- USAID;** Amplified Project Description, Rural Roads Maintenance Systems Project, dated June 19, 1989.
- Ibid Project Grant and Loan Agreements for the Rural Roads Maintenance Systems Project, dated August 31, 1987.
- Ibid Project Paper, Indonesia: Rural Roads Maintenance Systems (497-0353), June 12, 1987.
- Ibid Briefing Book for DIR, Rural Roads Maintenance Systems Project (497-0353) September 29 - October 2, 1992.
- Ibid Audit of USAID/Indonesia's Management of Rural Roads Maintenance Systems Project No. 497-0353.
- Ibid Letter No. II/1478, September 8, 1993 From Charles F. Weden, Director, to Mr. Richard C. Thabet, Regional Inspector General, Subject: Indonesian Mission's response to the [above] draft audit report.
- Ibid Memorandum, Subject: Rural Roads Maintenance Systems Strategy, dated January 9, 1991, From Fred M. Pollock, RRMSP/PO,ARD/RRM, to LTtwentyman, A/DIR, et al.

- Ibid Work Plan: Rural Roads Maint. System Project, no date.
- Ibid Rural Roads Maintenance Systems Project, Office Maintenance Appendixes, November 1991.
- Ibid Work Program Training Rural Roads Maint. Management System, November 1991
- Ibid RRMS Training Program 1993/1994, March 1993.
- GOI DPUK Equipment Fleet Management System (Simplified) Guidelines 1 thru 7, Procedures and Documentation for Equipment Repair and Warehousing, August 1993.
- Ibid DPUK Equipment Fleet Management System (Revised) not dated 1993.

ANNEX 10.

LIST OF PEOPLE CONTACTED

Annex 10

LIST OF PEOPLE CONTACTED

BANGDA Officials:

- | | |
|-----------------|------------------------------------|
| 1. S.K. Mangiri | Director of Regional Dev. |
| 2. Budi | Staff, Sub-Directorate of Reg.Dev. |
| 3. Tasfin | Training Project Manager |

BAPPENAS Officials:

- | | |
|------------|--------------------------------------|
| 1. Salim | Chief, Regional Dev.Dist.Level |
| 2. Sjahrir | Ass't.Chief, Regional Dev.Provincial |

BINA MARGA Officials:

- | | |
|--------------------|--------------------------|
| 1. Sumaryanto | IBRD Project Coordinator |
| 2. Ateng Alibasjah | Equipment Division |

JENEPONTO Officials:

- | | |
|----------------------|----------------------------------|
| 1. Sirajuddin S. | Bupati Jeneponto |
| 2. Wirawan Haruri | Chief of Kabupaten Public Works |
| 3. Tan Malaka Guntur | Head of Kabupaten Planning Board |
| 4. Anwaruddin | Chairman of Tender Committee |
| 5. Natsir Djoha | Project Manager/Pimpro |

PINRANG Officials:

- | | |
|----------------------|----------------------------------|
| 1. Firdaus Amirullah | Bupati Pinrang |
| 2. Noce Rumlawan | Chief of Kabupaten Public Works |
| 3. Abdul Kadir Pais | Head of Kabupaten Planning Board |
| 4. Ruslan Hanafi | Chairman of Tender Committee |

SIDRAP Officials:

- | | |
|------------------|---------------------------------|
| 1. Andi Salipolo | Bupati Sidrap |
| 2. Syafruddin | Chief of Kabupaten Public Works |
| 3. Rahman Sikong | Chairman of Tender Committee |
| 4. Fajar Suseno | Project Manager/Pimpro |

TAKALAR Officials:

- | | |
|------------------------|----------------------------------|
| 1. Syahrul Saaharuddin | Bupati Takalar |
| 2. Mustabi Rahim | Chief of Kabupaten Public Works |
| 3. Syahrir Pangarengi | Head of Kabupaten Planning Board |
| 4. Rahman Sila | Chairman of Tender Committee |
| 5. Rivai | Project Manager/Pimpro |
| 6. Octovianus | Staff Bina Marga Province |

SULSEL Provincial Officials:

- | | |
|---------------------|--------------------------------------|
| 1. Rachman Iskandar | Pimpro PBPJK, Bina Marga |
| 2. Rifai | Head of Kabupaten Dev. Sec. |
| 3. Sayadi | Head of Infrastructure, BAPPEDA TK I |

NTT Provincial Officials:

- | | |
|-----------------------|-----------------------------------|
| 1. Mr. Nailiu | Chief Bangda Province |
| 2. Mr. Masan Bali | Chief Bina Marga Province |
| 3. Mr. Mathaous Ley | Chief Bappeda Provincial Planning |
| 4. Mr. Paul Lewe Rihi | Bupati |
| 5. Mr. Yusuf Dea | Chief Dept. of Public Works |
| 6. Mr. Yoca Adoa | Chief of Maintenance |

STV/Lyon Staff:

- | | |
|-----------------------------|-------------------|
| 1. Proposed COP | Clare Copleman |
| 2. DCOP Sul.Sel. | Jim Halley |
| 3. DCOP Jakarta | Jerry Becker |
| 4. Maintenance Engineer | Jeff Garmong |
| 5. Institutional Specialist | Tom Raquer |
| 6. MIS Specialist | Herb Stewart |
| 7. Local Govt. Coordinator | Ida Syukur |
| 8. Planning Process | Sri Purwanti |
| 9. Assistant Engineer | Michiko Hafid |
| 10. Supervisor Engineer | Soemardjo |
| 11. Supervisor Engeneer | Maruli |
| 12. COP | Charles Whitmarsh |

USAID Officers:

- | | |
|----------------------|---------------------------|
| 1. Charles Weden | DIR |
| 2. Phil Gary | DD |
| 3. Virgil Miedema | PPS |
| 4. Richard Nishihara | AEE |
| 5. Rob Thurston | AEE (transferred) |
| 6. Fred Pollock | AEE (transferred) |
| 7. Juaniata Darmono | PPS (transferred) |
| 8. Benjamin Stoner | AEE |
| 9. Alfred Nakatsuma | AEE |
| 10. Wouter Sahanaja | AEE |
| 11. Nancy Langworthy | PPS |
| 12. Firman Aji | AEE |
| 13. Charles Clark | Consultant, Ujung Pandang |
| 14. Edwards McKinnen | Training Consultant |

IBRD Staff:

1. William Hardi

Resident staff

IBRD Consultants:

1. Roger Gould
2. Joseph Weinstock

Team Leader
Consultant

ADB Staff:

1. Joseph Hunt
2. Bong Koo Lee

Repelita VI Planning Team
Resident staff

ANNEX 11.
GLOSSARY OF TERMS AND ACRONYMS

GLOSSARĪ

ADT	average daily traffic
ARD	Associates in Rural Development
<i>Babinsa</i>	<i>Bintara Pembina Desa</i> , Army member in charge of security services in <i>desa</i> territory
<i>Bagian Keuangan</i>	Finance Division
<i>bandeng</i>	fish fry
<i>Bappeda</i>	<i>Badan Perencanaan Pembangunan Daerah</i> , Regional Development Planning Board (<i>Dati I & II</i>)
<i>Bimas</i>	<i>Bimbingan Massal</i> , Mass Guidance Program for Rice Intensification
BPD	<i>Bank Pembangunan Daerah</i> , Regional Development Bank (government-owned)
BPP	<i>Balai Penyuluhan Pertanian</i> , Agricultural Extension Center (Agriculture Department)
BRI	Bank Rakyat Indonesia
<i>Bukopin</i>	Bank Umum Koperasi Indonesia
<i>bupati</i>	head of <i>kabupaten</i>
<i>camat</i>	head of <i>kecamatan</i>
<i>daerah</i>	region; autonomous level of government (<i>Dati I & II</i>)
<i>Dati I</i>	<i>Daerah Tingkat I</i> , Administrative Region Level I (province, autonomous)
<i>Dati II</i>	<i>Daerah Tingkat II</i> , Administrative Region Level II (<i>kabupaten</i> , not autonomous)
<i>desa</i>	village, administrative area below <i>kecamatan</i>

<i>desu persiapan</i>	soon to become a <i>desa</i>
<i>desa</i>	village, administrative level below <i>kecamatan</i> (not autonomous)
DFM	Decentralization: Finance and Management
<i>dinas</i>	sectoral agency at <i>kabupaten</i> , provincial, or national level
<i>Dinas Perikanan</i>	Fishery Agency (province and <i>kabupaten</i>)
<i>Dinas Pertanian Tanaman Pangan</i>	Food Crop Agriculture Agency
<i>Dinas Pendapatan Daerah</i>	Local Revenue Agency
DIP	<i>Daftar Isian Proyek</i> , List of Approved Projects
<i>Dipenda</i>	<i>Dinas Pendapatan Daerah</i> , Local Revenue Agency
<i>dispensasi jalan</i>	fee for overweight trucks
<i>Dolog</i>	<i>Depot Logistik</i> , Rice Procurement Agency (GOI)
DPRD	<i>Dewan Perwakilan Rakyat Daerah</i> , Regional Assembly (province and <i>kabupaten</i>)
DPU	<i>Departemen Pekerjaan Umum</i> , Ministry of Public Works
DURP	<i>Daftar Usulan Rencana Proyek</i> , project proposal (later approved as DIP), for new projects
FY	fiscal year
<i>gabah</i>	unhusked rice
GDP	gross domestic product
GKG	<i>gabah kering giling</i> , mill-dried unhusked rice
GKP	<i>gabah kering panen</i> , harvest-dried unhusked rice
GOI	Government of Indonesia

<i>gotong-royong</i>	voluntary participative work
IBRD	International Bank for Reconstruction and Development
<i>Inmum</i>	<i>Intensifikasi Umum</i> , general intensification
IPAIR	<i>Iuran Pemakai Air Irigasi</i> , irrigation users fee
<i>Ipeda</i>	land tax superseded by PBB
ISC	Irrigation Services Contribution
<i>kabupaten</i>	district; administrative subdivision of <i>Dati II</i>
<i>Kas Daerah</i>	provincial and <i>kabupaten</i> government funds
<i>Kas Negara</i>	central government funds
<i>kecamatan</i>	administrative level below <i>kabupaten</i> (not autonomous)
<i>kepala desa</i>	village head
<i>kotamadya</i>	municipality; second-level autonomous region (<i>daerah</i>) and non-autonomous administrative region (<i>wilayah</i>) headed by <i>walikota</i> ; urban areas
KUD	<i>Koperasi Unit Desa</i> , Village Unit Cooperative
LKMD	<i>Lembaga Ketahanan Masyarakat Desa</i> , government-mandated organization responsible for village-level development activities
<i>lurah</i>	village head (urban)
<i>mandor</i>	foreman
microlet	passenger car (called <i>pete-pete</i> in Pinrang)
MOF	Ministry of Finance (<i>Departemen Keuangan</i>)
MOHA	Ministry of Home Affairs (<i>Departemen Dalam Negeri</i>)
<i>musyawarah</i>	<i>desa</i> -level meeting
NTT	Nusa Tenggara Timur (province)

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OECD	Organization for Economic Cooperation and Development
<i>Organda</i>	<i>Organisasi Angkutan Daerah</i> , regional transportation organization
P3A	<i>Perkumpulan Petani Pemakai Air</i> , water users association
<i>pajak daerah</i>	local taxes
<i>palawija</i>	secondary food crops (non-rice, non-tree crops)
PBB	<i>Pajak Bumi Dan Bangunan</i> , property tax
<i>Perda</i>	<i>Perturan Daerah</i> , Government Regulation
<i>pete-pete</i>	public transport vehicle
PMU	Project Management Unit
PPL	<i>Penyuluhan Pertanian Lapangan</i> , Agriculture Field Extension Worker
PU	<i>Pekerjaan Umum</i> , Public Works
RDA	Regional Development Account
<i>retribusi daerah</i>	local fees (retributions)
Rp.	<i>rupiah</i> , unit of Indonesian currency
RRMS	Rural Roads Maintenance Systems (Project)
<i>sawah</i>	wetland for rice
SDO	<i>subsidi daerah otonom</i> , grant
<i>sekwilda</i>	<i>sekretaris daerah</i> , kabupaten secretary
SK	<i>Surat Keputusan</i> , Decision Letter
<i>Sub-Dolog</i>	<i>Dolog kabupaten</i> office
SulSel	South Sulawesi
<i>swakeola</i>	force account

TA	technical assistance
<i>rambak</i>	brackish water farms
<i>uang pangkalan hasil bumi</i>	terminal fee
<i>Undang-Undang</i>	national law
USAID	United States Agency for International Development

ANNEX 12.
SCOPE OF WORK

Annex 12

SUMMARY RESPONSES TO SOW GENERAL QUESTIONS

The Scope of Work posed five general questions concerning cross-cutting criteria to be considered in evaluating the project: relevance, efficiency, effectiveness, impact, and sustainability. These have been considered in the analyses comprising the body of the evaluation. Summary responses to the questions are:

- Relevance: The project is relevant to the GOI development strategy, which emphasizes decentralization of governmental functions and rural development in the Outer Islands. It is also relevant, not only to similar goals embodied in prior USAID strategies, but to current USAID goals: democracy/ grassroots participation and private sector development.
- Efficiency: The project, with its major design component of road rehabilitation and an even greater implementation over-emphasis on such rehabilitation, has not been an efficient mechanism in the past for achieving its primary objectives. The paradigm shift proposed below, however, with its focus on institutional development and sustainability, including training starting off at the decision-maker level, as well as maintenance itself, should resolve the problem.
- Effectiveness: Project effectiveness has been limited by the factors discussed under efficiency above, but has nevertheless laid a solid foundation to build upon.
- Impact: Again, there is an ample potential for project impact that has not yet been realized. There are few proxy indicators available, due to the lack of information so far generated, but such information generation would be a key component in the recommended project continuation.
- Sustainability: This is, of course, the determinant of whether the whole exercise was worth doing. The principal keys to sustainability, funding and priority, appear to be capable of being obtained if - but only if - the project is permitted to move on to successful institutionalization through the proposed paradigm shift.

RURAL ROADS MAINTENANCE SYSTEMS PROJECT (497-0353)

MID-TERM EVALUATION
SCOPE OF WORK

I. EVALUATION PURPOSE

The Rural Roads Maintenance Systems (RRMS) project is an institutional development project whose purpose is to assist provinces and districts establish effective and sustainable systems to manage and maintain district roads.

With two years remaining before the project completion date, the RRMS is at a critical juncture. The complex nature of the project and a different contextual environment than that envisioned by its designers, has led to a series of intensive Mission reviews and significant adjustments. Yet, the Mission now feels the project has the potential to make a significant impact in Indonesia's roads sector at a broader level than intended by its designers. In this light, the evaluation will focus beyond a standard measurement-, description-, and input-output orientation that is limited to progress to date. The thrust will be on forward planning and identifying core successes on which to focus and concentrate sustainability efforts. Emphasis will be on evaluating the project within its new reality and engaging principle stakeholders -- including other donor agencies -- to negotiate or suggest solutions based on this changing reality.

There are two purposes to this mid-term evaluation. The primary purpose is to assess the institutionalization of RRMS management systems and objectives in sustainable ways. It will assess and validate the Mission's current revised approaches to achieve this purpose. The second purpose is to document for the Mission and other relevant stakeholders: what the project design intended to accomplish; how actual accomplishments compared with the intended; and what should be further accomplished to ensure sustainability of project benefits. Evaluation conclusions and judgements will be a basis for senior management decisions about the project's future emphases. To achieve these purposes, the evaluation will focus on the following:

- * Sustainability and Institutionalization -- These will be common theme threads throughout the evaluation. The evaluation will assess strategies to more effectively address institutionalization of RRMS systems, as well as the Mission's current pilot approaches in equipment maintenance and expanded training, among others. It will specifically review current actions to make project contributions more sustainable and recommend further necessary steps, if any.

- * Policy agenda -- Work to date in policy studies and reform will be reviewed for relevancy and effectiveness. Recommendations will be provided for further improvement in policies, rules or procedures which can further strengthen district-level (kabupaten) abilities to rehabilitate and maintain road networks at that level.
- * Project design assumptions -- The initial project design and its guiding assumptions will be reviewed. The evaluation is expected to produce a revised logframe and technical analysis. It will also produce a cost/benefit, economic analysis of project returns under the revisited project scenario.
- * Lessons learned -- The team will provide an analysis and compilation of valuable lessons learned to be packaged for the purpose of Mission, GOI and other donor consumption.

II. BACKGROUND

A. Project Goal and Purpose

The project goal is to increase growth in agriculture, rural industry and trade; the project purpose is to establish effective and sustainable systems of road maintenance and management at the district level. Implementation focuses on nine districts to test and demonstrate the means and benefits of applying maintenance systems to managing district road networks. It is expected that these demonstrations will result in the use of project designed systems and procedures in all provinces and districts in the country.

Project outputs targeted for sustainability consist of the following key elements:

- systems: to establish work priorities, for contracting rehabilitation and maintenance, and to balance budget resources with network needs;
- procedures and skills for effective implementation; and
- organization and incentives for effective implementation.

B. Basic Project Components

- management systems for road rehabilitation planning, design and implementation, and road and equipment maintenance and management;

road rehabilitation and maintenance activities;
equipment maintenance and procurement;
training; and
policy studies

1. Management Systems

The project is developing systems for all aspects of district road network management, with activities focused on designing guidelines to:

- identify the Very Important Network (VIN) as a means of prioritizing rehabilitation and maintenance and directing resources to the most economically beneficial roads;
- improve traffic and road condition data and analyses;
- screen and select roads to be rehabilitated;
- evaluate alternative maintenance and rehabilitation interventions; and
- manage and maintain heavy equipment and equipment workshops.

2. Rehabilitation and Maintenance

The project provides funding for rehabilitating priority road links in each of the target districts. The works are carried out through private local contractors who are monitored and supervised by district public works officials and project TA. About 800 km of district roads are targeted for rehabilitation over the life of project.

Project management systems are being used to program and implement maintenance activities in each of the project districts. As a CP under the project grant agreement, the GOI has adopted a national maintenance strategy for local roads and has increased funding levels for this purpose.

3. Equipment Procurement and Workshop Improvement

RRMS is providing road maintenance equipment, workshop tools and equipment. Project funding is also constructing and rehabilitating equipment workshops. A pilot Unit Swadana activity is about to begin which aims at using equipment rentals and local resource generation for funding equipment maintenance.

4. Training

An expanded, comprehensive training program has been designed and is now being implemented. Major elements include on-the-job training in materials testing, equipment and workshop management, equipment operation, traffic surveys, tendering procedures, and quality control. Management seminars have been held for the benefit of district and provincial government personnel and in-country degree programs are being funded under the project.

5. Special Studies

A critical project component are the special studies on relevant policy and management issues. These studies are the principal vehicle to transfer RRMS lessons learned to the district road efforts of other donors. These studies are also used to design pilot initiatives to be tested under the project.

C. Implementation History and Status

RRMS was designed in FY87 and began implementation in early FY88 under a "bridging" TA contract with Globetrotters Engineering Corporation. Approximately one year later a long-term TA contract was signed with STY/Lyon Associates, the present contractor under the project. The project is in the sixth year of implementation. PACD is August 1995.

All planning and management systems have been designed. These systems are at various stages of testing and implementation with road rehabilitation planning/design systems and road maintenance management systems being used to some degree in all nine target districts. An improved tendering system has been designed and is presently being tested. 280 kms of roads have been rehabilitated with project funding and 80 GOI district staff have been trained in technical and construction management aspects.

Several lots of maintenance and rehabilitation equipment have been procured and are on site. Construction of new equipment workshops and rehabilitation of others have been completed or is underway. An equipment management system (EMS) has been developed and reviewed by public works officials. EMS has recently been introduced in a number of kabupatens.

Training programs related to technical and management aspects of road and equipment maintenance have been carried out in all project districts. A training film on the project designed tendering system has been produced and is being used. Two special studies have been completed on contractor performance and on local resource mobilization (LRM). Two pilot activities designed as part of the LRM study are presently being implemented. A third special study on equipment maintenance policy was completed in March 1993.

III. Evaluation Questions

A. General Questions

The purposes of the evaluation have already been outlined in page one of this SOW. Within these umbrella guidelines, the team should bear in mind five, cross-cutting criteria in evaluating the RRMS project design, its achievements to date, and its prospects for attaining project purpose. These are relevance, efficiency, effectiveness, impact, and sustainability:

relevance: What is the relevance of the project to the overall development strategy of USAID and of the GOI? What is the relevance of the project inputs or activities to the achievement of the project purpose?

efficiency: How well do project inputs and activities address the problems and constraints of district road development? Are there alternative means of addressing these problems and constraints that will make more efficient use of project resources?

effectiveness: What has been the quality and timeliness of project inputs on policy reform and establishing systems? What are some actions/reforms that will improve the effectiveness of achieving project EOPS?

impact: What are the most appropriate measures of project impacts? What are some proxy indicators of project impacts for which data are readily available?

sustainability: How can sustainable institutional development be evaluated? What are the principal obstacles to sustainability of project achievements?

B. Specific Tasks and Questions

The following are specific tasks and related questions in eight areas: technical factors, institutionalization of maintenance and management systems, policy reforms, contracting, economic and financial factors, donor coordination, project management, and gender concerns. The evaluation team should consider the questions as illustrative and is invited to propose additional ones that appear to be critical in the course of its investigations.

1. Technical Factors

For the purposes of this evaluation, it is assumed that the technical problems of rural road construction and maintenance are relatively well understood and would receive less emphasis than the institutional problems. Nonetheless, the evaluation will provide a technical analysis of technical issues facing GOI engineers and contractors, in relation to those outlined in the project design. Better strategies for overcoming these technical problems will be recommended. The analysis should cover a review of design specifications, construction and maintenance technologies, availability of materials and the following technical issues:

- * Are the means selected and the methods proposed for realizing project targets technically the most suitable and cost effective? Are standard Bina Marga specifications adequate for the variable conditions and uses of kabupaten roads? To what extent can poor road conditions be linked to poor construction, lack of maintenance, failure to control use?
- * Are prescribed maintenance regimes sufficient to ensure surface integrity under normal conditions? Are there definition problems related to terms such as rehabilitation, improvement, betterment, periodic maintenance, routine maintenance, preventive maintenance, etc.?
- * What is the comparative experience of force account vs. contracted maintenance? What problems are associated with quality control of contractors?

2. Institutionalization of District Road Maintenance and Management Systems

The project has developed planning and management systems for road rehabilitation and maintenance, and equipment management and maintenance. The team should review the guidelines and manuals prepared under the project and conduct interviews with the primary stakeholders as to the appropriateness and use of these materials. The evaluation will assess factors governing the project's sustainability such as environmental factors (stakeholder support, government policies), as well as system/process factors (planning, incentives, flexibility). Training should also be reviewed as a key element of institution building, as well as the following questions:

- * How have GOI organizational structures, systems or procedures changed as a result of the project? How are project systems being institutionalized? To what extent have district governments adopted these systems? What incentives exist for district public works staff to employ and sustain these systems? Are such systems and road rehabilitation (outlined in the EOPS) necessary conditions for sustained road maintenance? What are the constraints to further change and how might the project address them? What institutional reforms are likely to improve quality control of rehabilitation works?
- * What are the key decision points in the processes for funding, project design, project selection, and contractor selection? How effective and efficient are these processes? How do they differ for each source of funding? What are the prospects for reform and improvement?
- * Which institutional weaknesses in the rural roads industry principally relate to the level of technical skills and management know-how of government engineers and managers, and/or are they caused by other problems that require further analysis and reform?
- * Do effective mechanisms exist for the articulation of road user preferences? How do existing institutional arrangements affect the responsiveness and accountability of public officials?

- * Are current strategies sufficient to disseminate and institutionalize project systems and lessons learned? Which project benefits most likely to continue after the PACD? Is the current reallocation of project resources (equipment maintenance pilot, expanded training) sufficient to ensure these benefits are sustained?
- * Who has received training under the project? What have been the initial impacts of project training? Has training made, or is it likely to make, a difference in the quality of kabupaten roads? Has training and training selection been appropriate and effective? Would different training be better? Is the current plan to expand training a reasonable solution to current requirements? If not, what more should be done?

3. Policy Reforms

The project has conducted special studies to review key policy areas affecting project purpose and to propose needed reforms. The team should review the special studies undertaken to date and discuss their findings and recommendations with key GOI, USAID, and TA contractor representatives. The following questions should be addressed:

- * What are the most critical policy issues affecting the achievement of RRMS objectives? Have the special studies undertaken to date addressed these issues? What has been the process by which the findings and recommendations of special studies have been reviewed and acted upon? How should future special studies be conducted to improve the likelihood of policy reform implementation? Have there been unplanned policy effects as a result of project activities?
- * What are GOI plans and policies for decentralization? How do they affect development of the rural roads sector?

4. Economic and Financial Factors

Because the project has evolved significantly since its initial design, the evaluation will include a revisited economic analysis of RRMS costs and benefits. The economic analysis should address economic efficiency criteria, as well as equity criteria. Are the economic returns sufficient to justify continued Mission use of resources for RRMS activities.

Economic Analysis: In terms of economic efficiency, are RRMS's project contributions producing meaningful returns to kabupaten roads in project areas and beyond? Is the level of benefits sufficient to justify project assistance? How do the real costs of the project compare with the benefits? Are current guidelines and methodologies for project selection and processes for resource allocation and budgeting leading to reasonably efficient resource use? Do local political concerns outweigh the economic criteria for road investments? In terms of equity, what has been the distributional weight of project costs and benefits, i.e. who is deriving the most benefits from project investments, increase in trade and agricultural production, etc.? Are there examples of indirect project impact, i.e. increase in land value?

The availability of financial resources is a principle constraint to sustaining rural roads and is an issue which cannot be totally separated from economic issues. The evaluation will assess the various sources of rural road financing (intergovernmental transfers, donor funding, local government fiscal revenues, and local resource mobilization) in terms of the quantity of resources, specific allocations, impact on the use of national resources, transfer mechanisms, and RRMS impact on these systems. Questions to be addressed may include:

- * **Financial Factors:** Do budget allocations meet minimum revenue requirements? Is maintenance management as recommended in the project likely to receive sufficient budgetary support? How do the processes for budgeting of Inpres funds inhibit the selection of projects for improvement and maintenance that reflect local preferences? What strategies could enhance local resource mobilization and kabupaten-sourced revenues for road maintenance? What has been the result of pilot efforts in local resource mobilization for road maintenance? How and when might sustained rural road maintenance be financed from Indonesian sources without the assistance of international donors/lenders?

5. Contracting

Project funded road rehabilitation contracts have been subject to design improvements, more efficient tendering processes, and more intensive quality control. The Ministry of Home Affairs has endorsed the project's improved contracting procedures. The team should assess the quality of the project's design standards for road rehabilitation, as well as review the project's proposed contracting procedures and experience in contractor supervision. The following questions should be addressed:

- * To what extent do these improvements resulted in higher quality road works, and more cost effective and equitable contracting? Are there indications that these improvements will continue after project inputs have ceased? How has the decision to use Host Country Contracting affected implementation, as opposed to the original proposal to use the Fixed Account Reimbursement (FAR) system? What steps should be taken to increase the likelihood that the progress in contracting practices achieved under the project will be sustained?

6. Donor Coordination

Aside from USAID, the rural roads sector in Indonesia involves a number of major donors: the World Bank, ADB, and the Japanese OECF. The RRMS project has the potential to impact the way other donor agencies implement their road projects, i.e. contracting procedures.

- * To what extent have RRMS policy reform efforts coordinated with other donor agencies in the rural roads sector? What has been the impact of A.I.D. coordination with other donors? How could lessons learned be more effectively exchanged and applied? How can decentralization policies or other related reform be supported through donor-funded road projects?

7. Project Management

Key management actors in the RRMS project are the Ministry of Home Affairs (Bangda), the long-term TA team, and USAID Mission staff. The evaluation team should ascertain the management responsibilities of each of the concerned parties and assess their effectiveness and efficiency. The following questions should be addressed:

- * Have GOI host country contributions been adequate in terms of input size, sequence and timing?

- * How effective has the long-term technical assistance been toward the achievement of project purpose and outputs? Has monitoring been adequate in terms of frequency/timeliness of field visits by relevant staff? How has the participation of an independent certifier contributed to the project?
- * How have internal A.I.D. procedural requirements affected project implementation, e.g. approvals, Host Country Contracting, etc.? What has been the impact of four A.I.D. audit and I.G. evaluations? How effective were the audits in terms of recommending substantive changes which improved project management, T.A. performance, and GOI support for the project?

8. Gender Concerns

Although RRMS assistance is not directed to women, there are several ways in which the project benefits them. RRMS contractors have several women owner/operators as well as numerous women employees. Better roads are increasing women's income through improved access to markets. The evaluation team is not required to do a comprehensive analysis of gender impact, but is required to collect and assess available project information on likely impacts on women. This information should be approached as a cross-cutting issue comprising a part of data collection and analysis in all activities. The following questions should provide a guideline:

- * What has been the project's greatest impact upon women, i.e. reduced transport costs, time savings, access to markets and health/education services, increased land values, decrease in household income/savings due to increased road user fees, etc.? Are there ways to promote more benefits for women in district road rehabilitation and maintenance?
- * To what extent are women employed by the project or been subcontractors at the managerial and unskilled level? In comparison to men, do women employed by the project receive equal pay for equal work? To what extent have women participated in project training programs? Is the project structured to maximize women's participation in training and employment, especially at the technical and managerial level? Are there ways to improve access by women to project benefits?

IV. METHODOLOGY

The evaluation team will use a combination of interviews with project personnel (including contractors and beneficiaries); and experts in the field. The analysis for this evaluation report will make clear: 1) what information is available; 2) a specific discussion of the limits of the data; 3) what conclusions can be drawn and with what confidence; and 4) what recommended course(s) of action for the Mission and the GOI in light of the findings and conclusions. In gathering and analyzing data, the team will consult the sources and, unless otherwise stated, will follow the procedures set forth below.

A. Documentation

Key project documents which the team will review are not limited to:

- RRMS Project Paper and
- DIR briefing books
- USAID quarterly implementation reports
- STV/Lyon Quarterly Reports
- Road Management System
- Equipment Management System
- Two Envelope Contracting
- selected road rehabilitation projects
- Special Study on Contracting
- Special Study on Local Contractors
- Special Study on District

B. Interviews

The evaluation team should conduct interviews with the following agencies and actors:

- Steering Committee
- RRMS/Bangda;
- Bangda Officials - District Development
- Bina Marga Officials
- Provincial and District
- Bupatis
- Bappenas
- STV/Lyon TA team
- USAID staff
- donor representatives
- other kabupaten roads
- local contractors
- kabupaten residents, pilots

ANNEX 13.
TEAM COMPOSITION AND METHODOLOGY

Annex 13

TEAM COMPOSITION AND METHODOLOGY OF EVALUATION

A. Team Composition:

Institutional/Sustainability Analyst: **Arie Lastario Kusumadewa**;
Transportation Economist: **Robert Rafloski**;
Civil Engineer: **Gerald T. Scott**;
Institutional Development Specialist/Team Leader: **Paul N. Wenger**.

B. Evaluation Methodology:

- Perusal of project-related documents: Annex 9;
- Meetings with USAID officials: Annex 10;
- Meetings with GOI officials and staff: Annex 10;
- Meetings with other donor officials/consultants: Annex 10;
- Interviews with STV/Lyon personnel: Annex 10;
- Meetings with contractors and other private sector individuals: Annex 10;
- Field trip examination of roads, workshops, etc.
- Discussions and vetting of drafts among team members.

The evaluation was carried out first, in an office setting, by way of: extensive document reviews; continuous discussions with USAID personnel and technical consultants involved with the RRMS project; and a program of widespread interviews with appropriate central agency GOI officials, plus staff and consultants of the international agencies operating in the roads sector.

Cognizant of the need to "ground truth" the documentation made available and the home office personnel interviewed, particular importance was attached to the ten day field trip made by the entire evaluation team, accompanied by USAID and consultant staff, to five of the nine project districts: Kupang in NTT and Jenepono, Pinrang, Sidrap and Takalar in Sulsel. In the course of this field trip, the team met with virtually all of the local officials directly involved in project implementation, drove a substantial portion of the roads dealt with, and inspected a representative sample of the road construction and maintenance equipment and the maintenance workshops and storage facilities required for the servicing of such equipment. The information obtained as to the actual, practical operation of the project did much to shape the eventual findings of the evaluation.

C. Principal Problems:

Perhaps the most difficult judgements required in the course of the evaluation have been resolution of frequent discontinuities between the statements of GOI officials and consultant team members, on the one hand, and their actions on the other. Are these cases of merely

telling us what they think we want to hear? Or do they represent sincere desire to perform coupled with an incomplete understanding of the modalities necessary to carry out the desired actions? Offshoots of this problem have been: the team's difficulty in obtaining complete and consistent data from the parties, an indicator of inadequate record keeping and/or communication; plus a confrontational attitude on the part of the consultant in the face of even constructive criticism, a stance hardly conducive to optimum cooperation among the parties.

ANNEX 14.
ORIGINAL EXECUTIVE SUMMARY

Annex 14

(ORIGINAL CONSULTING TEAM VERSION)

EXECUTIVE SUMMARY

and

PRINCIPAL RECOMMENDATIONS

for the

INDONESIA RURAL ROADS MAINTENANCE SYSTEMS PROJECT

A. Executive Summary:

BACKGROUND:

The Indonesia Rural Roads Maintenance Systems Project (RRMS) was authorized in June 1987, with an eight year LOP. Project design was generally sound, with recognition of the GOI thrust toward decentralization, the need for institutionalization of District (**kabupaten**) road maintenance and the necessity of sustainability. The major flaw in the design was that road rehabilitation was included as a "necessary" activity. It was seen as only a means toward the end of creating maintainable roads, but it diverted the attention of all parties away from maintenance, institutionalization and sustainability, a flaw greatly exacerbated in the course of project implementation. The fact that this is mainly an institutional problem with The Ministry of Home Affairs (**BANGDA**) and the **kabupatens** is shown by generally adequate maintenance of national/provincial roads by the Highway Department (**Bina Marga**).

PURPOSES OF EVALUATION:

The main purposes of the current evaluation are: to determine the accomplishments of RRMS to date as potential building blocks for future fulfillment; assess the institutionalization of RRMS as an indicator of potential project sustainability; advise whether the project should be terminated, implemented to the current PACD, or **extended**; and recommend a management structure for the remainder of the project life. The evaluation will also deal with some of the issues raised in a recent RIG audit.

PROJECT ACCOMPLISHMENTS:

Project accomplishments have included development and partial testing of systems and manuals covering much of the range of project activities: equipment maintenance system; highway maintenance system; road link selection procedures; tendering and contracting procedures; and road work certification procedures. Workshop construction and some training have also taken place.

PROJECT SHORTFALLS:

Shortfalls in the project include: maintenance awareness is still low in BANGDA and the kabupatens and little is performed, while rehabilitation remains dominant; implementation has been slow; institutionalization and sustainability are questionable; there has been a lack of communication among the parties; training has been deficient; GOI budgetary problems have not been adequately addressed; and Other Donor coordination has been insufficient. Rehabilitation will only cover 1/3 of the kilometers projected.

RESOLUTION OF SHORTFALLS:

Although the project has so far fallen short of its potential, the evaluation team recognizes that any institutional development program is going to be slow in implementation and replete with problems, and believes that with the proper future-oriented USAID management decisions, RRMS can still be a solid success.

B. Principal Recommendations:

- The "Paradigm Shift" discussed in **RECOMMENDATIONS ON MANAGEMENT STRUCTURE**, below, should be adopted.
- Further rehabilitation activities and equipment purchases other than those already committed should not be authorized.
- USAID should examine the possible need for applying some direct funding to performance of maintenance to demonstrate in action its essentiality for a viable road network.
- Contingent upon satisfactory resolution of the above questions, USAID should extend the PACD until August 1996.
- Coordination with other donors should be given high priority and formalized.

RECOMMENDATIONS ON MANAGEMENT STRUCTURE

There appear to be five principal options for the future management structure of the RRMS project:

1. Terminate the project ASAP.

This option might permit considerable savings in USAID budgetary and human resources.

HOWEVER, it would result in major loss among the substantial benefits already accrued by the project, which constitute useful building blocks upon which a solid structure can be built but do not constitute such a structure themselves. Furthermore, it is unclear whether these savings could be transferred into other USAID program activities or would be lost to the development program in Indonesia.

The next two options would be valid whether the project is continued to its present August 1995 PACD, or is extended for one or more years.

2. Continue the project with minimal management changes on the part of either USAID or the long-term consultant.

This option would obviate the immediate task of designing and effecting major management changes.

HOWEVER, it would make anything approaching satisfactory attainment of project objectives quite unlikely and would constitute an ongoing management burden on the Mission.

3. Continue the project with some changes on the part of USAID, but a substantial management re-orientation by the long-term consultant.

This option would: preserve USAID from having to make major changes in its own management structure, and from undergoing a full-blown tendering process for some form of re-defined consulting services; and would retain a consultant firm with an extensive background in the project and its problems.

HOWEVER, it would: require USAID to take considerable pains to define what changes it wanted and why; run the risk that the deficiencies in consultant's performance are structural; and risk sending the GOI a "more of the same" message.

The final two options would be valid only if the PACD is extended for one or more years, as the evaluation team will recommend. They would also require USAID to engage a short-term consultant to prepare the required Scopes Of Work.

4. Change the management structure at the USAID end by contracting for a Project Management Action Unit (PMAU), while leaving the current long-term consultant in place; the evaluation contains an Annex describing a successful PMAU.

This option would permit USAID to manage the project within available resources thru the PMAU while keeping an operating consultant with background in the project and its problems.

HOWEVER, it would: require a full competitive procurement procedure to contract for the PMAU; create tensions between the PMAU and the long-term consultant; and also indicate to the GOI the absence of major change in project focus.

5. Enter into a "Paradigm Shift" through: a return to the institutionalization/sustainability theme of the original PP; reinforcement of this shift by employing a consultant more oriented toward those factors than toward engineering; and extending project implementation for one or more years.

This option would bring in a consultant with the type of expertise to do the job as it should be done and a clear understanding of what that job is; it would make it plain to the GOI that institutionalization/sustainability must be the prime focus of everybody's efforts; and it would allow sufficient time for the process to take place.

HOWEVER, it would: require a full competitive procurement procedure to contract for the new consultant, plus a start-up period for that consultant (which could be minimized by loading the SOW toward firms which already have a presence in country); and risk some diminution of effort during the remaining five months of the current consultant's tenure, as it prepares final reports to justify its performance and - presumably - prepares to tender on the new contract.

The SOW for the process of obtaining a consultant to implement the paradigm shift will be complex. A consultant with extensive experience in institutional development should be retained for that job under USAID supervision.