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Report No. 15245

PROJECT COMPLETION REPORT

INDONESIA

**REGIONAL CITIES URBAN TRANSPORT PROJECT
(LOAN 2817-IND)**

December 29, 1995

**Infrastructure Division
Country Department III
East Asia and Pacific Region**

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CURRENCY EQUIVALENTS

Currency Unit = Indonesian Rupiah (Rp)

(as of June 1995)

US\$1 = Rp 2,200

Rp 1 million = US\$455

(at time of appraisal)

US\$1 = Rp 1,650

Rp 1 million = US\$606

WEIGHTS AND MEASURES

1 meter (m) = 39.37 inches

1 kilometer (km) = 0.62 miles

1 hectare (ha) = 2.47 acres

GOVERNMENT OF INDONESIA FISCAL YEAR

April 1 - March 31

PRINCIPAL ABBREVIATIONS AND ACRONYMS USED

Bina Marga	-	Directorate General of Highways (MPW)
BINKOT	-	Directorate of Urban Road Planning (MPW)
CBD	-	Central Business District
CPCO	-	City Project Coordination Office
ERR	-	Economic Rate of Return
GOI	-	Government of Indonesia
IRE	-	Institute of Road Engineering
IUIDP	-	Integrated Urban Infrastructure Development Project
MPW	-	Ministry of Public Works
PMU	-	Project Management Unit

December 29, 1995

MEMORANDUM TO THE EXECUTIVE DIRECTORS AND THE PRESIDENT**SUBJECT: Project Completion Report on Indonesia
Regional Cities Urban Transport Project (Loan 2817-IND)**

Attached is the Project Completion Report (PCR) on the Indonesia: Regional Cities Urban Transport Project, RCUTP, (Loan 2817-IND, approved in FY87) prepared by the East Asia Regional office, with Part II prepared by the Borrower. The Loan for US\$51 million was approved on May 1987 and closed on December 1993. A total of US\$50.51 million were disbursed; the balance was canceled.

The project was designed to reduce bottlenecks in urban road infrastructure in Bandung, Medan, Semarang, and Surabaya. The main objectives of the Project were to: (i) implement a high priority program of measures aimed at improving traffic and transport infrastructure conditions in the above regional cities; (ii) develop technical capabilities in the planning and design of transport facilities in the project cities; and (iii) develop central government skills in planning and design of urban transport. The project consisted of road construction, rehabilitation, selected corridor improvements and maintenance; traffic engineering; training; and ongoing advisory assistance.

The project's implementation experience was satisfactory. Physical targets were achieved and, for some components, exceeded. The project benefited from a rapid mobilization of government after Loan signing, and had a remarkable pace in the implementation of major civil works. The road works were completed one year ahead of the appraisal report's estimate. Overall, the project helped to improve accessibility to various areas within the project cities. The average ERR for selected components at project completion exceeded 15 percent. Construction and maintenance quality proved to be adequate with the exception of a portion of the works, which experienced problems due to the quality of a contractor's work, particularly quality of materials and working methods. Institutional objectives were partially met: progress was achieved in developing skills in central government agencies but capacity building within the cities was limited and the demise of the Project Management Unit at project completion had repercussions in that planning and programming efforts in urban roads have not been sustained. As a result of their limited participation in the planning and management of the municipal institutional development components, and the lack of attention to city-level institutional problems, the cities' ownership of the project was limited. The knowledge imparted at the level of the regional cities cannot be used until legislation is passed to allow greater municipal autonomy.

The main lesson learned is that a legal framework within which responsibilities are established for transport planning at the municipal governmental project implementation level is an important prerequisite for achieving sustainable institutional improvement in urban transport planning.

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On balance, the project outcome is rated as satisfactory and its sustainability as likely; in view of the project's failure to strengthen city governments, its institutional development impact is rated as moderate. The PCR is of good quality.

No audit is planned.

Attachment

A handwritten signature or set of initials, possibly 'JF', enclosed within a hand-drawn oval shape.

INDONESIA
REGIONAL CITIES URBAN TRANSPORT PROJECT
(LOAN 2817-IND)

PROJECT COMPLETION REPORT ¹

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¹ The original closing date of this loan in the loan agreement was October 1, 1994. As the completion mission departed before July 1, 1994, a Completion Report was prepared in accordance with OP 13.55, not an Implementation Completion Report.

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INDONESIA
REGIONAL CITIES URBAN TRANSPORT PROJECT
[LOAN 2817-IND]

PROJECT COMPLETION REPORT

PREFACE

This is the Project Completion Report (PCR) for the Regional Cities Urban Transport Project (RCUTP) for which a loan of US \$51 million equivalent to the Republic of Indonesia was approved on May 19, 1987. The loan became effective in August 25, 1987. The loan was closed at the Borrower's request on December 23, 1993, some nine months earlier than the closing date in the loan agreement of October 1, 1994. Final disbursement took place in December 1993. The total amount disbursed against this loan was US \$ 50,516,268.45.

This PCR was prepared by Edward Dotson (EA3IN) and reviewed by Anupam Khanna, Division Chief (EA3IN) and Richard Calkins, Operations Advisor (EA3DR). This PCR is based on information in the project file and data provided by the Government of Indonesia (GOI). The Borrower contributed to the preparation of this PCR by preparing its own evaluation which is included as Part II of this PCR.

The completion mission for this project departed April 26, 1993.

Evaluation Summary

Introduction

The Bank has a long-standing association with the Government of Indonesia (GOI) in addressing urban policy issues and implementing urban investments, including urban transport. Preparation of the Regional Cities Urban Transport Project (RCUTP) began in 1984, at a time when there was a substantial backlog of investment in urban transport infrastructure. These conditions had a direct bearing on the composition of the RCUTP.

Project Objectives and Description

The objectives of the project, as set out in the SAR of April 1987 were to (a) implement a high priority program of measures aimed at improving traffic and transport infrastructure conditions in the project cities; (b) develop city professional and technical capabilities in the planning, design, implementation, and maintenance of transport facilities and services; (c) develop central government agency skills in (i) providing technical assistance to cities in planning, designing, implementing, and operating and maintaining their urban transport facilities and services; (ii) developing national policy guidelines and technical standards for urban transport, and (iii) preparing and appraising future urban transport projects; and (d) establish a process of coordinating the planning and programming of central and local government agency investments in urban transport infrastructure and services, so as to develop rolling multi-year comprehensive urban transport investment programs in the nation's principal cities.

Project Description

The project was designed to address backlogs in urban road infrastructure in the project cities (Bandung, Medan, Semarang and Surabaya) through the provision of 29 kilometers of road construction (US\$34.9 million); 14 kilometers of corridor improvements (US\$9.2 million); traffic engineering (US\$17.2 million); and road rehabilitation and maintenance (US\$12.5 million). In addition the project provided for training (US\$0.9 million) and technical assistance (US\$13.4 million) in project management, construction supervision, and preparation of future investments.

Project Implementation Experience

Loan Effectiveness and Project Start-up. Satisfactory mobilization of both government and consultant personnel promoted an early start with the project commencing shortly after the signing of the Loan Agreement in May 1987.

Implementation Schedule. The speed of implementation of the major civil works program was remarkable. Both city and central government administered works progress more rapidly than planned, which was particularly notable in the case of the latter .

Procurement. Procurement was in accordance with the Loan Agreement and Bank guidelines and tendering performance was continually assessed. For civil works, the average time required from completion of the bidding documents to contract signing was 12 weeks for contracts valued at less than Rp 1 billion and 19 weeks for higher-valued contracts. Due to the urgency of installing traffic signals at key intersections, procurement comprised a combination of civil works addenda, prudent shopping and ICB procedures.

Construction Quality. On the whole road construction and maintenance quality proved to be adequate. One noticeable exception was the rigid pavement of the southern part of the Bandung inner ring road.

Project Costs. The estimated costs of the project at appraisal were US\$88.1 million and the actual costs amounted to US\$83.4 million. Whereas the actual cost of civil works increased by 17 percent, reflecting the increased length of road works, the actual cost of equipment was reduced to just over half of base cost estimates. The actual cost of consulting services was 30 percent higher than estimated, reflecting the greater than anticipated technical assistance required for the project.

Loan Allocation. Adjustments to the loan allocation were made to reflect changing priorities and the need to respond to a dynamic environment. A major revision was made in October 1990, when US\$8.4 million of unallocated funds were reallocated to the other loan categories; further minor revisions made in June 1991 and September 1992.

Project Results

Project Objectives and Physical Results. The project was successful in the implementation of road works, traffic engineering and road maintenance. The actual length of road works exceeded SAR targets and were completed over one year ahead of the SAR schedule. Highway engineering and road maintenance knowledge has been successfully applied. Seminars held in project cities led to greater local understanding of urban transport matters but limited progress was achieved in developing skills in the preparation and appraisal of multi-year comprehensive urban transport investment programs.

Economic Benefits. Major road construction schemes were selected for post implementation evaluation and the average ERR achieved is 25 percent. Although the SAR did not estimate rates of return for road maintenance and traffic engineering it would appear from observations that these components generated a good rate of return.

Impact of the Project

The perceived impacts of the project, resulting from discussion groups held in the four cities, are improved working relations between city planning agencies, improved accessibility and increased travel opportunities, a noticeable increase in public transport service provision and a significant reduction in road accidents (in Bandung). Each city has adopted new practices for road maintenance with a computerized road maintenance management system. The training programs provided a greater understanding of transport

planning, highway engineering, road maintenance, and traffic management. The project involved land acquisition and families who held full title were able to use compensation to obtain land elsewhere; those without title received significantly less.

Project Sustainability

The economic benefits from the project are sustainable with normal maintenance. The planning and programming improvements for the development of urban road and urban transport projects supported by the Project Management Unit have not been sustained as the end of the project saw the demise of the unit. An important finding of the project is that the devolution of responsibilities for transport planning (including road programs and traffic management) to competent city local governments is the single most important requirement for a sustainable institutional improvement in urban transport planning, programming and design. The legal framework to achieve this devolution was not available as anticipated during the life of the project.

In the short run, the project has a positive environmental benefit, as pollution decreases with improved vehicle operating conditions, reduced fuel consumption and reduced emissions. In the longer term many of these benefits will likely be dissipated with the increase in traffic flow made possible by the project.

Findings and Lessons Learned

The main lessons to be learnt from experience on the project relate to institutional and development and project ownership. Although the physical works were successfully implemented and staff trained, there has been no sustainable capacity created at a local government level to undertake similar works in the future, without once again setting up project specific management arrangements.

Borrower Performance

Covenants have been fully complied with except in two cases. The project management structure adopted enabled direct and efficient lines of communication between central and local government staff, and contributed towards the successful implementation of the project.

Part I: PROJECT REVIEW FROM THE BANK'S PERSPECTIVE

Project Identity

Name: Regional Cities Urban Transport Project
Loan Number: 2817-IND
RVP Unit: East Asia and Pacific Region
Country: Indonesia
Sector: Infrastructure

Background

1. In the infrastructure sector, the Bank has a long-standing association with the Government of Indonesia (GOI) in addressing policy issues and implementing its urban strategy, including the strategy for urban transport. The Regional Cities Urban Transport Project (RCUTP) was conceived at a time when historic investment in urban transport was low and there was a substantial backlog of potential viable projects from which to compile development programs. Notable were the opportunities for quick and high return investments in the traffic engineering, traffic management and road maintenance subsectors. These conditions had a direct bearing on the composition of the RCUTP. The project was seen at the time as a stand alone urban transport project, not directly related to other projects.

2. Preparation of the Regional Cities Urban Transport Project commenced in 1984 with the principal objectives of strengthening the capability and effectiveness of both central and city governments to plan, provide and maintain urban transport infrastructure and services (Table 2). These objectives were and are still consistent with the GOI's twin development goals of decentralizing responsibilities for urban transport management to city authorities and integrating the planning, programming and budgeting for urban transport with those for other development sectors at the local level.

Project Objectives

3. The principal objectives of the project, as set out in the SAR of April 1987 are to:
- (a) implement a high priority program of measures aimed at improving traffic and transport infrastructure conditions in the project cities;
 - (b) develop city professional and technical capabilities in the planning, design, implementation, and maintenance of transport facilities and services;
 - (c) develop central government agency skills in (i) providing technical assistance to cities in planning, designing, implementing, and operating and maintaining their urban transport facilities and services; (ii) developing

national policy guidelines and technical standards for urban transport, and (iii) preparing and appraising future urban transport projects; and

- (d) establish a process of coordinating the planning and programming of central and local government agency investments in urban transport infrastructure and services, so as to develop rolling multi-year comprehensive urban transport investment programs in the nation's principal cities.

Project Description

4. The project was designed to address a substantial backlog of road infrastructure, traffic engineering, and road maintenance needs in the cities of Bandung, Medan, Semarang, and Surabaya. The project consisted of the following principal components:

- (a) **Road Construction (US\$34.9 million):** (i) construction of 4 km of new road links in Bandung and Semarang, and (ii) widening or major reconstruction of 25 km of existing road links in all four project cities;
- (b) **Corridor Improvements (US\$9.2 million):** selected improvements to 14 km of road links in all project cities through comprehensive measures which will involve less than full reconstruction; this includes, inter alia, selective repaving, drainage and traffic-engineering measures;
- (c) **Traffic Engineering (US\$17.2 million):** provision of (i) comprehensive traffic improvements to the congested central business districts; (ii) improvements to isolated intersections, (iii) traffic signal equipment at about 140 intersections across all four project cities; and (iv) citywide street signing and road marking programs;
- (d) **Road Rehabilitation and Maintenance (US\$12.5 million):** provision of equipment to execute routine road maintenance works, and funds for conducting road rehabilitation and maintenance works and related activities for a five-year period in each project city;
- (e) **Training (US\$0.9 million):** establishment of training programs, with the principal emphasis on city-level technical and professional staff development in the areas of transportation planning, traffic engineering, road maintenance, and construction management; and
- (f) **Technical Assistance (US\$13.4 million):** consultant services to Bina Marga and the project cities for: (i) project management, including project accounting, conducting a city transportation services institutional study and preparation of annual traffic engineering and road rehabilitation/maintenance programs; (ii) construction supervision; and (iii) preparation of future projects.

Project Organization and Design

5. The Project Management Unit (PMU), attached to the Directorate of Urban Road Planning (BINKOT), Directorate General Bina Marga, was responsible for the overall planning and control of the project and acted as the primary point of contact for local and central government agencies and the Bank. The detailed planning and execution of works in the project cities were coordinated and supervised by the City Project Coordination Offices (CPCOs). Each CPCO operated as a project implementation office under the direction of the Mayor with guidance from a Local Steering Committee. The Chief of the CPCO was a city government-appointed officer who was supported by two Project Managers responsible for Bina Marga and City-funded project implementation.

6. Considerable technical assistance support was needed to supervise and monitor the implementation of the physical works associated with the project. These services were required in each of the four Regional Cities involved, Surabaya, Bandung, Medan and Semarang and also in Jakarta where the overall management and coordination of the project was controlled through the Project Management Unit (PMU).

7. Throughout the project there was a need to provide direct assistance to the Directorate of Urban Road Planning (Binkot) for the management of RCUTP including matters related to IUIDP (Integrated Urban Infrastructure Development Projects), the development and implementation of Repelita V urban roads policy, and general assistance with the planning and programming of projects. In addition there was a special need to provide assistance to the Institute of Road Engineering (IRE) in Bandung in introducing a system of identifying and designing urban transport facilities to solve road safety problems. This was achieved by providing:

- Ongoing advisory services and technical assistance for coordinating and monitoring implementation (including financial accounting) and further project preparation.
- Advisory services and technical assistance to the Directorate of Urban Road Planning to support the Cities in developing urban transport capability (through the Institute of Road Engineering in the case of road safety).
- Direct technical assistance to the City Agencies.
- On-the-job and formal training.
- Technical support for the supervision of construction.

8. By design, the project was supported by several technical assistance contract phases involving both local and foreign consultants. Phase I was primarily concerned with the implementation of the first years program of works and the production of final engineering designs and contract documentation for the financial year 1988/1989.

9. In December 1988, the project entered its second technical assistance phase. The scope of works called for ongoing assistance to supervise and monitor the continued implementation of the five-year program of works and for the fulfillment of the formal training program. There was also a requirement for assistance in the annual update to the five-year transport investment programs and the preparation of final engineering design and contract documentation for selected components.

10. Additional activities in Phase II concerned the identification and preparation of future investment requirements in a further five cities. This took the form of high priority urban road infrastructure and traffic engineering requirements and an assessment of the need for further study. These activities were carried out in coordination with the ongoing Integrated Urban Infrastructure Development Programs (IUIDP). The cities involved were Bandar Lampung, Denpasar, Palembang, Pontianak, and Ujung Pandang.

11. The final phase of the technical assistance support concerned supervision, preparation and monitoring of the remaining civil works and the traffic signals program. During this phase continuing support was provided to the cities, notably in Surabaya for the preparation of the IUIDP urban roads program.

Project Implementation

12. **Loan Effectiveness and Project Start-up.** Satisfactory mobilization of both government and consultant personnel promoted an early start with the project commencing shortly after the signing of the Loan Agreement in May 1987.

13. **Implementation Schedule.** The speed of implementation of the major civil works program was remarkable. Both city and central government administered works progressed more rapidly than planned, which was particularly notable in the case of the latter (Table 3). During the course of the five-year implementation program, over 200 components and packages of components were successfully implemented. The task of component preparation fell to the PMU who were responsible for compilation of the annual programs and preparation of contract and tender documentation. The only major perceived project risk was the ability of the city governments to implement and maintain project components that were substantially larger than past experience. This proved to be unfounded and very few delays were experienced.

14. With the exception of one city, land acquisition did not prove to be a noticeable source of delay and in most cases the right-of-way was available well in advance of the commencement of procurement.

15. **Procurement.** Procurement methods were determined in accordance with the Loan Agreement and Bank guidelines. The method employed was dependent on the contract value and contract type, i.e., whether it was for civil works or goods and services. As part of the monitoring procedures of the project, and in order to guide future programming, tendering performance was continually assessed in consultation with City and Bina Marga Project Managers. In the case of civil works, the average time required from the completion of the bidding documents to contract signing was no more than 12

weeks for contracts valued at less than Rp 1 billion and no more than 19 weeks for higher valued contracts.

16. Initially, it was intended to undertake the procurement of traffic signals by International Competitive Bidding (ICB). However, due to the urgency of implementing signals at key intersections the signals were eventually installed using a combination of civil works addenda, prudent shopping and ICB procedures.

17. **Construction Quality.** On the whole there were few exceptions to the general observation that road construction and maintenance quality for RCUTP components proved to be adequate. One noticeable exception to this, however, was the southern part of the Bandung inner ring road, Jalan Lingkar Selatan. During the course of implementation, a number of deficiencies in the quality of the materials and working methods employed by the Contractor came to light, the severity of which suggested premature failure of the pavement.

18. The problems were a direct result of the Contractor's failure to adopt acceptable construction techniques and procedures, failure to use appropriate plant and an adequately experienced work force. These shortcomings were exacerbated by the project organization structure, which conferred the responsibility for control to the Supervision Team, but failed to give them the necessary authority and resources to do so. However, it is important to bear in mind that Jalan Lingkar Selatan was one of the first rigid pavement roads to be constructed in Indonesia and as such the parties concerned were traversing the learning curve.

19. In pursuit of higher standards of quality construction, Bina Marga subsequently endorsed the remedial recommendations by adopting a Project Organization Structure which gave a clearer line of authority and more direct communication between the various project groups. More thorough contractor selection procedures were also introduced, aimed at promoting higher standards through the adoption of a performance monitoring system that endeavors to ensure contracts are only awarded to competent contractors.

20. **Project Costs.** The estimated costs of the project at appraisal were US\$88.1 million. (Base Cost US\$73.6 million, Contingencies US\$14.5 million). The final costs were US\$83.4 million. Civil Works costs remained within 10 percent of base cost estimated at appraisal. Equipment costs were slightly more than half base costs. Consulting Services costs increased by around 30 percent, reflecting the greater than anticipated technical assistance required for the project. Table 4 provides further details.

21. **Disbursements.** Disbursement performance was impressive and reflects the overall efficiency of project execution. Table 5 illustrates that disbursement figures were well ahead of appraisal estimates. By June 1989, half of the loan had been disbursed, as compared to the SAR estimate of 18 percent. The rate of disbursement performance was maintained throughout the project but most notable was the major civil works executed by Bina Marga, with over 90 percent of disbursement achieved by December 1990.

22. **Loan Allocation.** The original and revised allocations for the loan are shown in Table 4. Variations to the amount allocated by type of works/services reflect changing priorities and the project's ability to respond to a dynamic environment. A major revision was made in October 1990, when US\$8.4 million of unallocated funds were reallocated to the other loan categories. Minor revisions to the loan allocations were made in June 1991, and September 1992.

Project Results

23. **Project Objectives.** An assessment is provided below, based on implementation experience, of the achievement of project objectives:

- (a) to implement a high priority program of physical works
- (b) to develop local government (city) capabilities
- (c) to develop central government skills in providing technical assistance to cities, developing policy guidelines and technical standards, and preparing and appraising future urban transport projects
- (d) to establish a process to develop multi year comprehensive urban transport programs in principal cities

24. **Physical Works.** The project was successful in the implementation of physical works. The actual length of road construction and corridor improvements exceeded the targets set in the SAR by 60 percent and 20 percent respectively. In addition the works were all completed over one year ahead of the schedule in the SAR. Traffic management and road maintenance works were also successfully implemented. Of note was the successful procurement and implementation of traffic signal equipment at over 100 junctions by means of contract addenda, prudent shopping and ICB procedures.

25. **Develop city professional and technical capabilities.** Seminars were held in each of the project cities aimed at strengthening the planning and programming capability of city transport agencies. A greater understanding of transport planning, highway engineering, traffic management and road maintenance now exists, as well as the relationship between them. In terms of practical application of this acquired knowledge, it is difficult to see how the majority of participants will be able to use their knowledge of transport planning and traffic engineering until such time as responsibilities in these fields are fully transferred from central to local government. This transfer is provided for in Law 14, 1992, but necessary enabling regulations have only recently been issued. Highway engineering and road maintenance knowledge has been successfully applied in the adoption of improved working practices.

26. **Develop central government agency skills.** The central government agencies with prime responsibility for urban transport are the Directorate of Urban Road Development (BINKOT) in the Ministry of Public Works, and the Directorate General of Land Transport (Perhubungan Darat) in the Ministry of Communications. The former is

responsible for urban roads, the latter for all other urban transport modes. Skill development was through on the job training provided through technical assistance, and formal training courses. The real test (or performance indicator) of the extent to which this objective has been achieved is the extent to which these agencies are delivering to a greater extent and better quality than before the project, technical assistance to cities, policy guidelines and technical standards, and prepared and appraised future projects.

27. Such a change is not easy to document with regard to technical assistance to cities. At the start of the project, BINKOT and Perhubungan Darat were undertaking much of the transport planning and design work for the cities in part because the responsibility for these activities had not been decentralized. It was expected that the enabling legislation permitting the transfer of responsibility for these functions would become effective during the life of the project. In practice transfer took longer than anticipated, and the capacity of cities to undertake this work is only now emerging. A review of the current situation shows that technical assistance to cities continues to involve both agencies taking responsibility for undertaking planning, design and implementation of road and urban transport projects. The change is that this assistance is now provided at the request of the cities who now have the legal responsibility for these activities, with the cities as client. The amount of advice that can be given by BINKOT and Perhubungan Darat continues to be constrained by the limited staff of both agencies. The quality of advice is affected by the numerous and often conflicting demands on the time of these staff.

28. In relation to developing skills for formulating technical standards, the project would appear to have achieved the objective. Three major technical standards have been published since loan closing - Highway Capacity Manual for Urban Roads, Geometric Design of Urban Roads by BINKOT, and Traffic Management Design Manual by Perhubungan Darat. There is less tangible evidence of skills having developed for preparing National Policy Guidelines in urban transport. Policy formulation skills have been developed in Perhubungan Darat, as shown by the active role taken by this agency in the preparation of the Highways and Road Traffic Action Plan which is being supported by the Bank's first and second Highway Sector Loans. That such skills have not so far been applied to urban transport to the same extent has been due in part to the delay in reestablishing an urban transport unit in Perhubungan Darat, which would be responsible for formulating such policy, and in part to the limited human resources available.

29. Significant progress was achieved in the development of central government skills regarding the preparation and appraisal of future transport projects. However, it is evident from the continuing reliance on consultancy services that these benefits have not been fully realized due to human resource and institutional limitations. Continuing support is required to further develop central and local government skills and address limitations.

30. **Establish a coordinating process to develop rolling multi-year comprehensive urban transport investment programs.** Such a process would essentially be part of the planning process for IUIDP. In terms of urban transport investment programs, the IUIDP planning process has been concerned mainly with the provision of road infrastructure, and has relied heavily on external studies. The project was a major provider of these studies.

In particular in Phase II of the project, urban transport programs were prepared for the IUIDP for the cities of Bandar Lampung, Denpasar, Palembang, Pontianak and Ujung Pandang. Phase III, supported the preparation of urban road and traffic management programs for the Surabaya UDP. However, there is little evidence that any systematic coordinating processes have been developed.

Physical Results

31. The physical works in the project included road construction, road corridor improvements, traffic engineering, and road rehabilitation and maintenance. Table 7 compares SAR estimates of the scope of works with the actual outcome. The actual length of road construction was over 46 km, compared to an SAR estimate of 30 km, an increase of some 60 percent. Some 16.5 km of road corridors were improved against an SAR estimate of 13.8 km, an increase of 20 percent.

32. In the scope of works of the traffic engineering component, the quantities of CBD improvements, intersection improvements, signing and road markings were not specified. Approximately 60 percent of the component was appraised, with the remainder to be prepared and implemented on a programmatic basis. Traffic signal equipment was to be provided at an estimated 143 intersections, with the actual number of intersections to be equipped to be subject to continual review. At half these intersections, the equipment was to replace existing unreliable and obsolete signal equipment. In practice equipment was supplied and installed at only 107 intersections. Table 7 provides further details of the SAR estimates and actual outcome for the physical works of traffic engineering component.

33. **Road rehabilitation and Maintenance.** This component contained two items. First that portion of the five year maintenance programs of the project cities that was undertaken by contract with private contractors. The type of works to be undertaken were specified in the SAR, but the extent of the maintenance program was determined during the project. As indicated in Table 7, rehabilitation and periodic maintenance were carried out on some 183 Km of primary and secondary roads.

34. The second item was procurement of equipment for road maintenance undertaken by force account. Table 8 gives details of the equipment provided by the project. Differences from the SAR equipment list reflect a revised assessment of local needs during project implementation.

35. **Training.** The formal training program extended over a two and a half year period, compared to the two years estimated in the SAR. A total of 27 courses were provided. With one exception, the material presented was as set out in the SAR. The Bina Marga Training Committee decided in view of the good appreciation of computers and their more general application, that it would be beneficial to substitute the Computer Course with a course on road safety. This course was directed at the use of the road accident system installed in the project cities as part of the project.

36. **Studies.** A review of the institutional arrangements for traffic management and road maintenance in project cities was undertaken early in the project. The results of this review were used to develop project proposals for traffic management units and road maintenance units. In the second technical assistance phase studies were undertaken for the identification and preparation of future investment requirements in Bandar Lampung, Denpasar, Palembang, Pontianak and Ujung Pandang. Further details are provided in Table 9 of the Part III.

Economic Benefits

37. At appraisal, schemes for inclusion in the civil works program were selected on the basis of the estimated economic benefits. The benefits were calculated from reductions in vehicle operating costs, and savings in travel times for work related trips. Sensitivity analysis was undertaken on internal economic rates of return (ERR) considering only vehicle operating cost savings. In order to determine whether the internal rates of return estimated at appraisal had been realized, post construction traffic surveys were undertaken. As resources were limited, the components selected for post implementation evaluation were major road construction schemes, on the basis that the benefits from these schemes represent a substantial proportion of the estimated benefits. To facilitate comparison, the post construction evaluation methodology was the same as the methodology used at appraisal, and only benefits from vehicle operating cost savings were considered. All costs and benefits were discounted to 1985 prices.

38. The results of the comparison are shown in Table 10. The average ERR achieved for the components reviewed is 25 percent. However the results by project city are mixed. In Bandung and Surabaya the actual ERR are greater than the SAR estimates. In Medan ERR are significantly less than estimated. The main reason for this was the unforeseen re-designation of the dedicated truck network and the relocation of the bus terminal, resulting in a lower than predicted use of roads constructed under the project. The ERR of 15 percent for Jl. Bakti corresponds to the minimum ERR considered acceptable at appraisal. In Semarang, the ERR for the Northern Ring Road Sections I & II is less than the SAR estimate due to traffic flows being less than forecast. This situation is expected to improve when section III is completed and the whole Northern Ring Road is open to traffic.

39. The SAR did not estimate the ERR for road maintenance and the traffic engineering components of the project. The assumption was made that such components had high rates of return in other projects, and therefore could be expected to have more than acceptable rates of return in this project. The situation before the project was not reported in measurable terms, so any assessment of benefits must be based on observation and professional judgment. The road maintenance works have resulted in improved operating conditions for vehicles. Traffic management measures have increased road capacity and resulted in local road safety improvements. From these observations, it is reasonable to make a professional judgment that these components do have a high rate of return.

Impact of the Project

40. The impact of the project can be assessed in relation to the physical environment, human resource development and technology transfer. In each city, the project improved the traffic flow, safety and physical environment of the Central Business District (CBD), through the completion of by-pass roads or ring roads. These roads permit traffic to go from one part of the town to another without having to traverse the CBD. Within each CBD facilities for pedestrians were improved with the construction of sidewalks, and traffic flow conditions were improved with traffic management.

41. Environmental issues were not considered to be major concerns during project preparation and appraisal. During project preparation, the local environmental impact of major road schemes was studied. These studies were used to screen out investments that would have had a grossly adverse effect on the immediate localities. In order to assess the perceived environmental and social impact of the project, discussion groups were held, after completion of works, in the four cities. Specific groups were targeted and questioned about the project. These groups comprised local government agencies, private transport operators, road users, and commercial establishments in the vicinity of the improvements. The main points emerging were that the project had resulted in:

- improved working relationships between city planning agencies
- improved accessibility and increased travel opportunities
- a significant reduction in road accidents in Bandung
- drop in standards of driver behavior associated with the increased road capacity.

42. The project involved extensive land acquisition in four cities. However, as was the practice at the time, no special resettlement plan was prepared. Resettlement for all projects took place prior to the issuance of Kepress 55/93, Indonesia's improved land acquisition and resettlement policy. Because baseline surveys were not conducted and Bank and borrower resettlement supervision was sporadic, no quantitative conclusions can be made about resettlement performance. Nevertheless, anecdotal evidence from Bank supervision missions and retrospective information from a Bank-supported study report a mixed performance. Resettlers who held full title were often able to use compensation to obtain land elsewhere. Families without title received significantly less.

43. In terms of technology transfer, each city has now adopted new practices for road maintenance, and a computerized road maintenance management system. In the area of road safety, the UK Transport Research Laboratory MAAP accident recording system has been customized for application in Indonesia. It has been successfully installed in Bandung in cooperation the Institute of Road Engineering.

44. It was recognized at the start of the project that Indonesian cities needed to develop their capabilities in the urban transport sector. Particularly important functions requiring development were road maintenance, transport planning and traffic management. Development of staff capabilities, especially engineers and technicians, needed to be given top priority to meet these needs. The formal training programs and the on the job training

provided the participants with a greater understanding of transport planning, highway engineering, road maintenance, and traffic management.

45. The intention at the start of the project was that the trained staff would then apply these new skills in the local government traffic & transport units scheduled to be established during the course of the project. As the legal process governing the devolution of urban transport responsibilities took longer than anticipated, these units were not established during the life of the project. Some of the potential human resource development impact in the fields of transport planning and traffic management has therefore been lost.

46. The project also called for the establishment of road maintenance units in each of the four cities. These units came to fruition, the trainees were able to apply and develop their road maintenance skills.

Project Sustainability

47. The economic benefits from the project are sustainable, in that the physical works of the project can be preserved for their design life with normal maintenance and will fulfill their design functions. The one exception appears to be the inner ring road in Bandung. This was one of the first rigid pavement contracts in Indonesia, and construction quality was less than desirable despite adequate site supervision. Long term economic benefits will be less than expected at appraisal without substantial additional expenditure on rehabilitation.

48. The project management unit worked well in supervising the implementation of the physical works, and in preparing components for inclusion in IUIDP projects. However the end of the project saw the demise of the PMU. The planning and programming improvements for the development of urban road and urban transport projects supported by the PMU have therefore not been sustained. An important finding of the project is that the devolution of responsibilities for transport planning (including road programs and traffic management) to competent city local governments is the single most important requirement for a sustainable institutional improvement in urban transport planning, programming and design. The legal framework to achieve this devolution was not available as anticipated during the life of the project.

49. In the short run, the project has a positive environmental benefit, as pollution decreases with improved vehicle operating conditions, reduced fuel consumption and reduced emissions. In the longer term many of these benefits will likely be dissipated with the increase in traffic flow made possible by the project. A more sustainable solution lies in a package of measures including demand management public transport improvements, traffic management, land use planning to minimize the need for vehicular movements, in addition to an appropriate level of road network capacity increase. Although this project envisaged some steps forward in strategic planning, these were not fully realized due to the absence of a legal framework at a city level as noted above.

Bank Performance

50. Through the project, the Bank financed economically sound and sustainable physical works, and made a positive contribution to the institutional and human resource development of the urban transport sector, with a particular focus on the urban road subsector. At the time of project appraisal, less attention was given by the Bank as an institution to environmental and resettlement issues than would now be the case. Even so, the extent and financing of land acquisition and resettlement was discussed in the SAR, taken into account in the scheduling of physical works and confirmed during negotiations. Environmental impact was discussed in the SAR.

51. The main lessons to be learnt from experience on the project relate to institutional development and project ownership. In the SAR, the principal project risk was considered to be the capability of the project cities to implement and maintain the physical works components assigned to them under the project. To reduce the risks, training was provided to city staff, cities were requested to appoint selected key staff as a condition of loan effectiveness, and substantial TA was provided. Also included was a review of arrangements for planning and provision of urban transport services, including traffic management and road maintenance in the project cities. The loan agreement required an action plan based on the results of this review to be prepared and implemented. This would have been a reasonable approach. at the time.

52. However with the benefit of hindsight, there was no discussion of institutional issues at a city level in the SAR, in particular the nature and timing of the legal and administrative changes required, and no provision was made for institutional strengthening. The net result of the project is that the physical works were successfully implemented and staff trained. However, because the legislative and administrative changes were not completed during the life of the project, the cities were unable to take over direct responsibility for traffic and transport. As a result, there has been no sustainable capacity created at a local government level to undertake similar works in the future, without once again setting up project specific management arrangements.

53. Participation of the cities in the planning and management of the project was limited. In addition the guidelines for the preparation of a future RCUTP in the SAR envisaged a future project being identified by central government in consultation with local officials. As discussed earlier, this project was conceived as a stand alone urban transport project, but more consideration should perhaps have been given to ways of developing local ownership of project preparation, and of how this could be linked to IUIDP preparation. In practice, the Bank adopted flexibly to changing government policy and country circumstances and did not pursue the follow-up project immediately, but supported the preparation of components for IUIDP projects. This project prepared components which were included in IUIDP for Bandar Lampung, Denpasar, Palembang, Pontianak, Surabaya and Ujung Pandang.

Borrower Performance

54. The performance of the borrower in relation to loan covenants is set out in Table 11. Covenants have been fully complied with except in two cases. The first relates to the partial compliance to the covenant concerning the carrying out of the action plan for the planning and provision of transport services. The only aspect not fulfilled was the establishment of the traffic engineering unit. This can be directly attributed to the absence of necessary regulations governing the transfer of central government responsibilities to cities. This in turn was the cause of the partial compliance with the covenant requiring the cities to update the five year urban transport investment plans.

55. The Government of Indonesia is committed to devolve responsibilities for transport management from central government to local government, but progress was slow during the course of RCUTP. The necessary regulations are now on the statute books and local governments will soon be putting the new regulations into effect by setting up their own departments.

56. The project management structure adopted enabled direct and efficient lines of communication between central and local government staff, and contributed towards the successful implementation of the project. A flexible approach was adopted by the central PMU to the changing requirements of different agencies involved. This is best illustrated by the initially unprogrammed support the PMU provided for the preparation of the Surabaya IUIDP.

Project Relationship

57. The success of the project is a result of the close and effective working relationship established between the Bank and the Borrower, and between the various agencies and cities involved.

Consulting Services

58. There was considerable use of consultant services throughout the course of the project. Services were provided to both central and local government agencies. The services covered project planning and control, engineering design, contract documentation and supervision, financial accounting and monitoring, training, road maintenance and road safety. When consulting services were reduced (usually for budgetary reasons) in cities, the timing and quality of work outputs declined noticeably. Consultant performance was satisfactory.

Project Documentation and Data

59. The appraisal report provided a useful framework for the implementation of the project, and for the project completion review. The loan agreement was quite appropriate for achieving the project objectives.

Part II: PROJECT REVIEW FROM THE BORROWER'S PERSPECTIVE

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Project name	Regional Cities Urban Transport Project
Loan Number	Loan 2817-IND
World Bank Unit	Asia
Country	Indonesia
Sector	Urban
Subsector	Urban Transport

1. PROJECT IDENTIFICATION

Background

1.1. Before this project the Government and the World Bank had already cooperated extensively on road projects and on urban programmes, but they had not worked together on urban road systems. Indonesia had completed eight World Bank financed road projects totalling \$754 million. All were directed toward construction or betterment of rural or inter-urban roads. None had a city focus. Similarly, Indonesia had used World Bank finance for eleven projects in the Urban and Water Supply sector. While some of these projects contained transport components, none attempted to address general transport priorities in the project cities.

1.2. While the main focus of Indonesia road transport effort was on uniting the main population centres with reasonably high standard roads, including toll roads, to further integrate regional economies, the road traffic demand in the cities was growing rapidly. Large cities were growing in population by over 5% per year, and vehicle ownership was growing at about 15% per year. In many cities, traffic flows (vehicle kilometers) had trebled in a decade. The result was that cities were getting more and more congested, with longer and more frequent delays in road trips, particularly in peak hours. Because urban road expansion was not commensurate with vehicle growth and the growth of demand for urban road transport, the existing road system was overloaded, and in many cases roads were deteriorating rapidly. Maintenance expenditures were inadequate in most cities, and under these circumstances the scheduling of maintenance to prevent major damage was difficult. Traffic management was generally lacking, and traffic engineering was out of date.

1.3. Government attention to general road-transport planning for the project cities dates from the decision during 1985 to use part of the funds of a previous Bank project (No. 2049 IND) for transport studies in four cities: Bandung, Medan, Semarang, and Surabaya. The Government of Indonesia intended to identify a series of related road investments in each city and eventually to arrange Bank financing for these projects. Prior to the preparation work for this project, neither these cities nor Central Government institutions for road transport had much experience in planning and implementing multi-component urban road programmes. City road expansion, improvement, and major maintenance tended to be done piecemeal with the quantity of work depending largely on short term Central Government budget considerations. The project-identification studies focused on the road problems of the whole city for a five year period. They thus complemented

several concurrent initiatives of the Government and the World Bank that were aiming to encourage stronger city administration throughout Indonesia. These city studies included: studies of local government's fiscal and institutional capacity; studies of subsector programming for investment and maintenance; cost recovery studies; and (pulling together many of these ideas) an Urban Services Sector Study (Report No. 4800 IND, 1984). Generally, the Government of Indonesia and the World Bank were working towards a strategic, city-centered approach to urban management. The studies for this project, and the project itself, stopped well short of a strategic approach to road transport development. The project made some progress along this path, however, including the selection of investment and maintenance sub components from city wide lists of priorities, and the attempt to create institutions that would naturally have a city-wide focus.

1.4. The major perceived risk for this project at the time of appraisal was the risk that cities would not be able to do their part to implement project components, which comprised a much larger road programme than the cities had typically managed prior to the project. There was also concern that Bina Marga would not be able to manage their sub components and at the same time administer the entire project, with its dozens of sub components in four widely separated cities. Prior road projects that consisted of one or two major roads had been quite successful. On the other hand, the one World Bank financed road project with many scattered sub components (Rural Roads Development, 2083 IND) had been much less successful. Because construction often fell far short of design standards, the benefits from the Rural Road Project, which was nearing completion as this project was appraised, did not look to be sustainable with ordinary maintenance effort. The Project Completion Report, completed later, judged that the economic rate of return of the project, as implemented, was probably unsatisfactory, because the roads were deteriorating before yielding the benefits anticipated at the time of project preparation. With this experience, the Government of Indonesia and the World Bank appraisal team were quite aware of the potential difficulties, and a considerable part of the project preparation dialogue between the Government of Indonesia and the World Bank concerned institutional arrangements to guarantee, if possible, the achievement of a reasonable standard of construction.

2. PROJECT OBJECTIVES AND DESCRIPTION

Project Objectives

2.1. At the outset of Project Preparation, the RCUTP was intended to embrace multi-model (private/public) transportation. By Project Appraisal, the Project's aims were mainly road orientated. In summary, these were:

- to improve road infrastructure in project cities.
- to develop city capabilities to plan, design and implement programmes for road investment and maintenance.
- to develop central agencies' abilities: first, to assist cities in their road programmes; second, to set national road-transport guidelines and standards; and third, to prepare and appraise future projects.
- to establish a system for coordinating central and city programming in urban transport to develop rolling five year programmes of investment and maintenance.

Project Description

2.2. The project was designed to clear up much of the backlog of unsatisfied demand for road infrastructure, traffic engineering, and road maintenance in four project cities during a seven year implementation period 1987-94, which included a 5-year physical works implementation phase. New institutions were planned to facilitate the physical works of this project. These institutions would also form the framework for later strategic planning and project implementation under future projects. Their staff were to be trained in their specialised duties through this project's training programmes, and were to gain experience by implementing appropriate components of this project, with suitable technical assistance.

2.3. The project included the following major components:

- New road construction or complete reconstruction for 36 km of urban road links, bringing them to a four or six lane urban arterial standard.
- Major improvements, less than full reconstruction, to 14 km of major corridors.
- Traffic engineering for central business districts and other important intersections, selective signalisation, and extensive street marking and signing.
- Provision of equipment for road maintenance
- Extensive training of urban transport personnel in project cities and some training for Bina Marga staff.
- Technical assistance to project cities and Bina Marga for project preparation, project management, construction supervision.

Appendix A, provides details of the project composition. For each of the four cities the number and type of contracts are reported and are further supported by details of before and after construction component characteristics. Details of the training programme are reported in Appendix B

3. PROJECT ORGANISATION

The P.M.U.

3.1. The Urban Roads Directorate of Bina Marga (Binkot) and the four project cities were given responsibility for project implementation. Bina Marga set up a Project Management Unit (PMU) for overall management and control of the project. The PMU was to include representatives of the Ministry of Communication (responsible for public transportation, traffic regulation, and transport planning) and Ministry of Home Affairs (responsible for local government) as well as the Ministry of Public Works. In fact, Ministerial participation was achieved throughout the project duration, in the form of regular liaison and meetings with departmental representatives. In addition to overall project management, the PMU was to implement training programmes and provide technical advice and support to the cities. City Project Coordination Offices (CPCOs) were created to coordinate project activities at the city level and to report on all aspects of the project to the PMU. At the city level, BAPPEDA (development expenditure planning) were made responsible for preparing five year road investment plans for each city and for annually updating these plans.

3.2. The Bina Marga portions of the physical works of the project (that is, construction and major periodic maintenance on elements of the national road system within the project cities) were to be done by contracts administered by each city's Bina Marga project manager. In the event, Bina Marga did not second project managers to the cities but rather assigned managers directly for the Bina Marga contracts. This was an ordinary procedure for Bina Marga, and it permitted rapid implementation of the project. This direct implementation by a central agency produced indirect benefits to the local governments through involvement of the Kanwils. Practically speaking, they were central projects carried out in the local areas.

3.3. Some of the physical works in the city-administered portion of the project were also to be done by contract, under the supervision of a (newly appointed) city project manager, and some were to be done by force account. An important goal of the project was to devolve to the cities much of the responsibility for general transport management. To do this the project would have to enhance local skills, particularly in overall transport planning, traffic management, and road maintenance and rehabilitation. One scheme for promoting these skills was to form specialised institutions within local governments. Some of the staff of the local public works departments were to be assigned to two newly established specialised units: a traffic management unit and a road maintenance unit. These new units were to manage the relevant components of this project, with suitable technical assistance. Thus they would rapidly gain valuable on the job training in a large programme of works. They would also be given periodic formal training in short courses designed and managed by the PMU, particularly in areas that were quite new, such as overall road transport planning, and traffic management beyond the level of traffic engineering.

3.4. As discussed above, project organisation and staffing were recognised as crucial to the success of the project. Although Bina Marga's urban road directorate was only created in 1984, the importance of urban transport development and management was recognised and acknowledged as specialised disciplines. Accordingly, the transfer of technology was considered to be an essential aspect of this project. The decision to create a PMU with heavy foreign and local consultant inputs was a prudent approach to insuring the achievement of the project's physical targets and training goals. This approach to project organisation at the Bina Marga (central) level was successful as far as most of the centrally managed physical works were concerned. Overall management of the project by the PMU was good, helping to insure timely completion of works. Although the small share of training resources scheduled for Binkot staff were diverted to city staff training, Binkot achieved most of its own training goals. On the job training in project management and in financial monitoring was extensive and effective. Except for normal turnover, the staff who worked on this project are expected to remain in Binkot to use the training. If further projects of this type are done, Binkot could probably undertake overall project administration successfully with less assistance.

The C.P.C.O.'s

3.5. The attempted institutional changes in the cities were generally not carried out in time to contribute to the physical works of this project. This was due to the time required for the legislative process to establish a suitable legal framework for the proposed institutional development. A new CPCO was to oversee a newly nominated city project manager (and a seconded Bina Marga manager) and help to direct the necessary inputs to all of the local participants in the project, including two newly established technical units. In their infancy these city institutions would be attempting to manage physical works that were a multiple of the ordinary workload of the city in the road transport sector. Early in project implementation it became clear that the proposals and agreements to form new institutions in the cities were confusing to the cities themselves. Quarterly Progress Reports noted that cities questioned the need for the specialised units (for traffic engineering and for road maintenance), and they were confused about the lines of authority among the proposed CPCO, the local project manager, Bina Marga project managers, the chief of the local public works department, and other city officials. The CPCOs were established after minor delay, but they were not staffed adequately to carry out their intended project functions. Furthermore their lines to other project entities (project managers, the PMU, Bappeda) were lines only of information and advice. They had no authority to instruct. Once their staffing had improved, the CPCOs were useful as project monitoring offices. Two of the cities finally established specialised Road Maintenance Units toward the end of the project period, and it is likely that other cities will form such units.

3.6. This project provided upgraded tools for road maintenance (see Appendix A for details) and also trained road maintenance staff. This specialised training was effectively targeted to those working in maintenance in spite of the delay in forming specialised institutions. This training was apparently quite effective, resulting in better planning and design for maintenance and in the adoption of some improved maintenance techniques. One can expect that most of the trainees will continue to work in road maintenance after this project is over, providing long run benefits to the cities. The cities did not form Traffic Engineering Units during project implementation. The training component for transport management and development was directed at staff who were expected to be assigned to TEU's. This training proved to be successful in that it was well presented and well received by the participants. However, due to the delay in establishing the TEU's it is inevitable that some of the participants will not be assembled to work in these units. Although the legislation governing the establishment of the TEU's was delayed, the PMU continued to support these functions through, direct assistance, on the job training and inter-departmental coordination.

3.7. The intention was for the local Bappeda to produce five year investment plans for the road sector and to annually update them. In practice, the plan and the first annual update was prepared by the local Bappeda with assistance from the PMU and technical assistance in the cities. The cities expected that additional financial and human resources would be made available for this function, but this assistance was diverted to other priorities. Consequently, subsequent annual updates were not carried out. The cities, therefore, did not entirely fulfill the project covenant concerning planning, and gained limited experience during the project on the broader questions of overall road transport planning. However, it should be noted that there has been a general improvement in the understanding of transport planning and traffic management by city personnel.

4. PROJECT IMPLEMENTATION

4.1. The World Bank loan was negotiated in April 1987, signed in May, and made effective in August with no undue delays in the process. From the beginning of the project, progress on major physical works was rapid. There were few delays in the city-administered civil works and an accelerated performance on the Bina Marga ones, as Bina Marga took maximum advantage of a fortuitous availability of Rupiah funds. Three years after loan effectiveness, Bina Marga had completed over 95% of its planned physical works under the project. This consisted of the construction and major maintenance work on elements of the national road system in the towns, and it comprised just over half of the total project. The project cities also progressed more rapidly than planned on road construction and major reconstruction and rehabilitation. Traffic engineering and maintenance achieved reasonable momentum after early delays. By September of 1991, four years after project effectiveness, overall (City plus Bina Marga) disbursements were running more than a year ahead of the SAR's disbursement schedule (Table 4.1 compares the SAR disbursement schedule to actual disbursements for selected dates). By mid-1992, Bina Marga and the project cities had practically completed all physical works.

4.2. The costs of major physical works (the first two items in paragraph 2.3 above) have generally been similar to the appraisal estimates. Tables 4.2 and 4.3 compare the SAR estimates to final project costs for these components. Overall the project costs were 4.1 % less than expected for major road construction and reconstruction, and 3.7% less for corridor improvements. Both of these comparisons are figured net of components added or subtracted after appraisal.

4.3. Whilst the progress of implementation was spectacular there were occasional problems with the manner in which some projects were implemented. The realisation of some early road projects was in physical conflict with the construction of other infrastructure in the same right-of-way. These problems were overcome as liaison procedures were established with other agencies.

4.4. There were relatively few serious problems arising from scheme implementation and their incidence diminished as the Project progressed. This is attributed to a combination of good contract documentation and the progressive improvements in contract supervision and monitoring.

4.5. There were few significant variations from project plans for major components. Of these the most important was a major cost saving (Rp 3.7 billion) on construction of the Sungkono road sub component in Surabaya, most of which was used for two additional improvements to short segments of roads (Adityawarman and W. Corridor 1) near the central business district of Surabaya. A short section (1.96km, Rp 1.1 billion) of road construction was omitted from the Semarang sub projects and incurred no expenditure. These deviations from project plans do not materially affect the overall cost comparisons. Therefore the conclusion can be drawn from Tables 4.2 and 4.3 that Bina Marga and the project cities finished the major physical works of the project slightly below budget.

4.6. Road rehabilitation and maintenance, comprising, first, that portion of the five year maintenance programmes of the project cities that was done on a contract basis, and, second, procurement of equipment for routine maintenance done on force account, was planned in detail after appraisal. For contract maintenance, the PMU selected sub components, from shopping lists submitted by the cities, using a scoring system involving 17 indicators (e.g., the physical condition of the road, traffic density, the use of the road by public transport.) For the selected components, the PMU prepared detailed designs and bills of quantities. The sub components were aggregated into a few contracts, about five per city per year. The PMU then sent the contracts to the cities, through the CPCOs, for bidding and contract award. The bidding process was similar to that for major civil works, with approval by Bina Marga and a no objection procedure by the World Bank for the larger project packages. In general, bids reflected reasonable unit costs, and contracts were let and implemented with only minor problems. There were occasional misunderstandings between the PMU and the cities based on the fact that cities submitted their requests for maintenance sub components with only the barest attempt to estimate cost. Particularly in the early months of the project, the cities were then surprised, and their maintenance planning was disrupted, when the costs of the sub components as designed by PMU substantially exceeded rough initial estimates.

4.7. The civil works associated with traffic engineering, and signalisation were handled as described above for contract maintenance, and for this there were only minor problems. Equipment purchases for maintenance, and purchases of signaling sets for traffic engineering, were handled through a combination of ICB, LCB, and prudent shopping procedures as agreed with the World Bank during contract appraisal, with minor agreed changes among procedures during implementation.

Table 4.2

**ROAD CONSTRUCTION
ESTIMATED COSTS (SAR) AND ACTUAL COSTS (Rp.million)**

City/Component	SAR Estimate	Final Cost	Saving
Surabaya:			
Dupak	4006	2850	1156
Sungkono	8014	4266	3748
Adityawarman	(a)	1412	-1412
W. Corridor	(a)	<u>1316</u>	<u>-1316</u>
Subtotal	12020	9844	2176
Bandung:			
Lingkar SW	4133	2701	1432
Lingkar SE1	3178	6487	-3309
Lingkar SE2	<u>4160</u>	(b)	<u>4160</u>
Subtotal	11471	9188	2283
Medan:			
Sisingamangaraja	1887	1374	513
Bakti	1551	1116	435
Halat	2341	1304	1037
Aksara	1617	1629	-12
Sutrisno	1097	933	164
Sisingamangaraja II	1893	1331	562
Pattimura I	3235	1318	1917
Juandu	<u>1150</u>	<u>1246</u>	<u>-96</u>
Subtotal	14771	10251	4520
Semarang			
Kaligawe I	4074	1315	2759
Silirwange 2	1109	(c)	1109
Banjir Bridge	1060	2318	-1258
North Ring I (3km)	(e)	2845	-2845
North Ring II (3.8km)	(e)	(d)	—
Subtotal	6243	6478	-235
TOTAL	44505	35761	8744

Nb. The above values exclude land costs.

- a. This sub component was added to the project after negotiations.
- b. Included with Lingkar SE1 to form a single project.
- c. This sub component was dropped after appraisal
- d. Included under North Ring Road above to form single project of 6.61km
Value is partially estimated on basis of incomplete contract
- e. Detail not specified in SAR.

Sources:

1/ SAR Annex 1, Tables: 5-8

Table 4.3

**MAJOR CORRIDOR IMPROVEMENTS
ESTIMATED COST (SAR) AND ACTUAL COST (RP. million)**

City/Component	SAR Estimate	Final Cost	Saving
<u>Surabaya</u>			
East-West Link	4640	2493	2147
<u>Bandung</u>			
Kiaracondong 1	1197	711	486
Siliwangi	(a)	709	-709(c)
Subtotal	1197	1420	-223
<u>Medan</u>			
Warni and Bridge	1741	1718 (b)	23
Sisingam.	1390	1389	1
Subtotal	3131	3107	24
<u>Semarang</u>			
Corr. 1 W	892	606	286
Corr 1 E	1061	916	145
Corr 1 NW	1052	995(b)	57
Corr 1 NE	1089	564(b)	525
Corr 4	152	85	67(c)
Secondary Roads	(a)	402	-402(c)
Subtotal	4246	3568	678
TOTAL	13214	10588	2626

Nb. The above values exclude land costs.

- a. This sub component added after appraisal thus not included in cost estimates.
- b. Partially estimated on the basis of incomplete contracts.
- c. Post appraisal sub components not included in saving calculations.

Sources: SAR Annex 1, Tables 5-8; RCUTP Final Quarterly Progress Report

**MAJOR CORRIDOR IMPROVEMENTS
ESTIMATED COST (SAR) AND ACTUAL COST (RP. million)**

City/Component	SAR Estimate	Final Cost	Saving
<u>Surabaya</u>			
East-West Link	4057	2493	1564
<u>Bandung</u>			
Kiaracandong 1	1069	711	358
Siliwangi	(a)	<u>709</u>	<u>-709(c)</u>
Subtotal	1069	1420	-351
<u>Medan</u>			
Warni and Bridge	1568	1718 (b)	-150
Sisingam.	<u>917</u>	<u>1389</u>	<u>-472</u>
Subtotal	2485	3107	-622
<u>Semarang</u>			
Corr. 1 W	725	606	119
Corr 1 E	1110	916	194
Corr 1 NW	332	995(b)	-663
Corr 1 NE	1138	564(b)	574
Corr 4	81	85	-4 (c)
Secondary Roads	(a)	<u>402</u>	<u>-402(c)</u>
Subtotal	3386	3568	-182
TOTAL	10997	10588	409

Nb. The above values exclude land costs.

- a. This sub component added after appraisal thus not included in cost estimates.
- b. Partially estimated on the basis of incomplete contracts.
- c. Post appraisal sub components not included in saving calculations.

Sources: SAR Annex 1, Tables 5-8; RCUTP Quarterly Progress Report No. 21

5. PROJECT RESULTS AND CURRENT ESTIMATES OF BENEFITS

5.1. To outline the general physical achievements of the project as they now appear on the ground will help to provide an understanding of project benefits. In each city the project improved the traffic flow and safety of the Central Business District (CBD), and selected road segments and intersections outside the CBD, by implementing a series of traffic engineering improvements including signaling, marking, signing and some civil works such as channeling and sidewalk construction. Also in each city, the project financed several maintenance contracts, provided funds for maintenance equipment, and trained maintenance staff. The contract-financed maintenance improved the general condition of roads in project cities (a high percentage of important roads were repaired). Equipment, training, and technical assistance improved routine non-contract maintenance. The discussion below will focus on the rest of the project components, that is the road construction and major rehabilitation investments and the part of contract maintenance closely related to these investments.

5.2. In Bandung the "road building and major reconstruction" investments were concentrated in a series of continuous road segments that now form a box or "inner ring road" around the southern half of the central business district (CBD). Four arterials that intersect this box of roads (on the way to the CBD from the hinterland) were improved through major maintenance investments. The preexisting access to Bandung from the toll road (to Jakarta and Cirebon) also intersects this box. The result of this package of investments is that traffic entering Bandung along any radial from the south, east or west, for the southern half of the CBD, can use this new box to go around the CBD in a small-radius circle. A vehicle from the toll road, for example, with a destination in the eastern part of the CBD would enter the box road at the southwestern edge of the CBD, go around the box, and enter the CBD near its destination. Prior to the project the traffic pattern was for the series of southern radials to dump traffic directly into the CBD with much of it requiring to traverse the CBD to reach its destination.

5.3. In Semarang a new road (7 km) and improvements to a contiguous major road (7 km) will carry traffic around the northern edge of the CBD, connecting the major road to Surabaya (northeast of the CBD) to the terminus of the Yogyakarta toll road (west of the CBD.) This is a basic bypass function. Prior to the project, the route for a major traffic load from the Yogyakarta toll road to the Surabaya road was directly across the CBD. For traffic from the toll road to the northeast quadrant of the CBD, the project roads will also serve a distributor function, allowing this traffic to go around the CBD and enter near its destination instead of traversing the CBD from west to east.

5.4. In Surabaya the roads in two corridors (1.9 km and 3.0 km) have been reconstructed. These corridors carry traffic directly from the middle of the old (northern) CBD and the new (southern) CBD to the toll road and hence to the port and the hinterland. These outlet roads allow traffic from the CBD to exit the CBD and use the toll road as a bypass. The project also included maintenance on a continuous series of road segments from the southern fringe of the city and the airport, directly north through the CBD to the port.

5.5. In Medan the project has reconstructed roads and undertaken major traffic engineering works on a "box" of roads around the edge of the southeast quadrant of the CBD and has done major reconstruction work on two corridors going from the southwestern and southeastern corners of the CBD to major inter-city roads. The box of roads will distribute traffic from the southeastern arterial.

S.A.R. Benefits

5.6. The SAR's estimates of benefits were based on vehicle cost savings and time savings estimates for the road construction and major corridor improvement portions of the project. No benefit calculation was attempted for the traffic management components, but components of that type have been shown to have very high benefits when the data needed to quantify them are available, i.e., origin and destination data and extensive speed and flow data throughout the network. When such data and analysis resources are available the evaluation of traffic management schemes are often best conducted by considering the effects of each investment on traffic flows throughout the network, a model would be used to consider "with" and "without" cases for alternative packages of investment, and would assist the selection process of the alternatives considered. Due to the lack of resources, the selection of traffic engineering sub components undertaken in the RCUTP was without the assistance of a model (i.e., it relied on local knowledge and engineering judgement of deficiencies and pressure points in the system). Generally we would expect a model to provide a more comprehensive basis for selection, partly because a more thorough analysis of alternatives would be available. In the case of this project, however, the budget available for traffic engineering was well short of the very obvious needs. There is little doubt that the sub components actually done would have been chosen by any model, given a reasonable budget and there is little doubt that the benefits from the ones actually done were high. The perceived risk, going into the project, was not that the wrong sub components were chosen, but rather that the cities might implement them inefficiently. As discussed above, implementation was satisfactory. Similar arguments apply to the maintenance portions of this project. Backlogs were huge, the selection process was sensible, and the projects were implemented satisfactorily. They could hardly fail to have adequate benefits.

5.7. As discussed earlier in this section, the investments that were referred to in SAR as "New Road Construction and Widening" and as "Corridor Improvements" are also roads central to the urban networks of the project cities. In the SAR's justification of these investments a benefit analysis was undertaken in terms of increased capacity, increased speed, and the resulting decrease in vehicle operating costs per Km driven. Benefits were estimated as the sum of vehicle operating cost savings over the years of the project's life. Value of passenger time saved was calculated separately, based on the same speed and flow estimates. It is clear that the assumptions of these calculations were simplistic in that the area of component influence was limited to the component and its adjoining links. This may well have under-reported the actual benefits. However, it is not uncommon to observe that the components and surrounding roads are already heavily travelled and the increased speeds, which are assumed to persist even during daily peak traffic periods for the lifetime of the roads, will probably not last long at all. The conclusion is that where resources and circumstances allow large expensive urban road expenditures, they should be evaluated on the basis of their effects throughout the network.

5.8. Lacking the time and resources to do a network analysis for this report (and the "without" case would be difficult to undertake) we have chosen to quantify the economic rate of return using the method employed in the SAR (discussed in para 5.17) and to look for common sense indicators of benefits. These indicators are positive. The New Roads and Corridor Improvements are in each case building up to a significant traffic volume soon after completion. They were well selected as diversion roads for traffic from their surrounding networks. Network effects are obvious and benefits in the network are apparently substantial. The case of the Bandung box around the southern half of the CBD is illustrative of this point. The major benefits to be expected are those arising from the diversion of traffic from the CBD. In fact, these benefits are clear and obvious to experienced observers; traffic conditions in the southern portion of the CBD are much improved and the reduced vehicle operating costs and time costs of getting around in that part of the CBD are attributable largely to the box of roads around it. The general safety conditions have no doubt been improved by this component. Sidewalks, covered drains and signals on the new roads, and improved routing via the new roads away from the pedestrian-crowded CBD, must all be contributing to safety, though no scientific measure of the improvement is available. As in the case of traffic engineering, the New Roads and Corridor Improvements were the surviving sub components when a much longer list of improvements was pared down to fit within the project budget; the backlog of required roads was clearly there, and unless really poor choices were made, the returns were likely to be high. All of the above does not get us closer to a quantitative benefit estimate, but from a common sense point of view, there does not seem to be any indication that the project choices in this component were poor.

Environmental Benefits

5.9. Although they were not major concerns during project preparation or appraisal, environmental considerations are now seen to be of greater importance and in future projects environmental benefits or damage should be taken into account (The SAR discussion of the environment addresses resettlement from the expanded rights of way.). In short run terms, the project has a distinctly positive environmental impact. The resettlement programme was carried out as planned and was satisfactory. The environmental side of vehicle cost savings is fuel savings, hence pollution decreases. Routing of traffic outside the most congested areas of the CBD, which the project does in all cities, will reduce the local pollution in its most severe areas. Sidewalks, signals, drain covering and intersection channeling, all improve the well being of pedestrians. During project preparation, the local environmental impact of major road segments was studied, and environmental impact statements were prepared. These were thorough enough to have screened out investments that would have been grossly damaging to their immediate localities.

5.10. In the longer run, however, many of the project's environmental gains will be dissipated as the cities become congested again at the higher level of traffic made possible by this project. This will generally be true of projects of this type. Bottleneck relief, traffic growth and new congestion, bottleneck relief, then more growth, and so forth, is truly a vicious cycle in environmental terms, even though each project, like the present one, can claim short run environmental benefits. The environmental answers lie in such measures as traffic management and control, public transportation, and planning to minimise the

need for vehicle movement and to minimise the environmental cost of the necessary trips by commuters. Although this project envisioned some steps forward in strategic planning (which would naturally address environmental issues) these plans were the ones that fell by the wayside in project implementation. The Traffic Engineering Units were intended to provide the focus for traffic planning and management as well as traffic engineering proper. As previously discussed, delays were experienced in establishing these units. The cities produced an annual update (after the first year) of the five year investment programme, and although environmental considerations were taken into account they were not a significant feature.

5.11 In order to reflect on the environmental and social impact of the project, discussions were held in the four cities to assess perceived impact. The findings are reported in a separate document, appended to the report entitled 'Evaluation of RCUTP with a View to Future Project Preparation'. Specific groups were targeted and questioned about the project. These comprised local government agencies, private transport operators, private sector commercial establishments in the vicinity of the improvements and road user interviews.

Main consensus was:

- Working relationships between city planning agencies had improved
- Additional road infrastructure has
 - increased travel opportunities and improved accessibility
 - promoted improvement opportunities for CBD through congestion relief
 - led to a noticeable increase in Public Transport service provision.
- Noticeable drop in driver behaviour standards associated with increased road capacity and usage is regarded as long term problem.
- Bandung records show significant reduction in accident rate, attributed to RCUTP.
- Land compensation too low but subsequently offset against increased land values.

5.12. In summary, the environmental benefits from this project are immediate and the costs delayed, so the effect on the economic rate of return, could all benefits and costs be observed, would probably be positive or neutral. Another project of the same type, however, should be required to take due account of environmental considerations; bottleneck relief to otherwise uncontrolled congestion is simply environmentally unsound, and it will have higher environmental costs the more often the cycle of bottleneck relief and re-congestion is repeated, at ever higher levels of traffic.

Benefit Sustainability

5.13. Most of the benefits from the investments in this project are apparently sustainable; that is, the physical works of the project can be preserved for their design life with normal maintenance, and they will fulfill their design functions. This judgment is supported by the project's careful process of contract supervision, and the general lack of major problems concerning physical works that surfaced during contract supervision. The single important exception appears to be the box road in Bandung. For this project component, construction quality proved to be less than desirable and has resulted in significant surface cracking. Supervision was adequate, in that the project manager and the CPCO were informed promptly and in detail about the problems of construction as they emerged. The

main reason can be attributed to a general lack of experience, as this was one of the first rigid pavement contracts in Indonesia. Long term economic benefits will be less than expected at the time of appraisal without substantial additional expenditure. Nevertheless, this component is being heavily used and is currently yielding its expected benefits. Non quantifiable benefits are apparent in that the learning process concerning rigid pavements has been expedited and therefore future projects will benefit from this experience.

Institutional Benefits

14. In general the intended institutional benefits from this project did not materialize. The PMU performed reasonably well in the limited function of managing civil works, but the intended unification within PMU of the three Ministries (Public Works, Communications, and Home Affairs) who must coordinate to produce strategic transport approaches did not occur. Although the cities borrowed money to finance part of the physical works and technical assistance in their respective localities, they never came to own the project, in the sense of having power over and taking responsibility for the major project decisions. Needed project institutions at the city level were not formed. Major parts of the project were implemented directly by Bina Marga with no city responsibility. Attempts to practice routine long term planning in the cities commenced as planned but could not be maintained due to delays in formulating the required legislation. This function was subsequently fulfilled by central government directly through the PMU. Ambitions, such as promotion of city autonomy through the activities of this project, were promoted but could not entirely be fulfilled. However, the project did significantly contribute to the management of the institutional change process, the results of which were too late to directly benefit the project.

Training

5. Benefits from training were mixed. The training inputs were successful in terms of subject matter and delivery. Details of subject matter and phasing are presented in the Appendix B. All courses were well received, and progress was made toward building the local capacity to undertake training in the future. Pre-implementation training was a key instrument in the success of the project through the training of CPCOs, local project managers and other senior project participants. Post implementation training inputs could not have their full intended effect, because of the lack of established institutional slots for trainees, at the local level. Understanding of the subject matters has noticeably advanced and permits more fruitful discussions between central and local government agencies. Road maintenance, was particularly successful in that improved understanding resulted in the implementation of better working practices and methods.

5.16. Studies included in this project at appraisal included project identification and preparation work for another Regional Cities Urban Transport Project and further preparation for the Jakarta Urban Transport Project. During project implementation several tasks were added: preparation of the urban transport components of Integrated Urban Infrastructure Development Programmes in five cities; a transportation strategy study for Surabaya; traffic management action area planning for five areas in Surabaya; and the preparation of draft guidelines for traffic management studies. Most of these studies will contribute, or have contributed, directly to World Bank project preparation and appraisals. Further work on the draft guidelines for traffic management studies could have a substantial return. The guidelines are practical and action oriented, and they appear to be immediately useful for city traffic engineers/planners. They have yet to be field tested, however, and such testing would no doubt lead to revision and improvement. No funds remain for testing under this project.

The Economic Rate of Return

5.17. On the basis of cost and traffic growth estimates at the time of its appraisal, this project was expected to have rates of return averaging 36% for road construction, and 1% for major corridor improvements. Returns to traffic engineering and maintenance components were not calculated, but they were expected to be high, as they generally are known to be when data are sufficient to calculate returns on such components.

5.18. In order to assess whether the expected rates of return reported in the SAR were achieved, a series of post implementations surveys were carried out in each of the four cities. In view of the limitation on time and resources, the surveys were directed at measuring journey times and usage on the major road construction components, see appendix C for details. To aid comparison, the methodology employed in the SAR has been adopted and all costs and benefits have been discounted to the 1985 price base.

5.19. Table 5.1 summarizes the findings of the rate of return analysis. The average internal rate of return for these components, using vehicle operating cost benefits only, is 25%. Although this is some 5% lower than predicted in the SAR it is, in economic terms, a very satisfactory rate of return. Inspection of the results in each of the cities shows that components in Bandung and Surabaya are either greater than or virtually equal to the SAR estimates. The significantly lower rate of return on Jl Lingkar Selatan Barat as opposed to Lingkar Selatan Timur is primarily attributable to the higher rigid pavement costs associated with the former. In Medan, the rates of return are acceptable but in all cases lower than the SAR estimates. This reflects a lower than predicted heavy vehicle usage caused by redistributive effects through the relocation of the bus terminal and re-signation of the dedicated truck network. In Semarang, the North Ring Road yielded a lower but acceptable rate of return when compared to the SAR estimate. Again reflecting a lower than predicted usage. Appendix D summarizes the findings of the economic evaluation exercise and reports speed and usage comparisons between the SAR estimates and the post implementation survey measurements.

5.20. Apart from the rate of return measurements, there are several indicators that point toward the conclusion that the economic return is adequate. First, traffic movement in areas adjacent to the improved corridors has improved noticeably. Second, traffic movement in the corridors is growing rapidly, and traffic movement in the areas adjacent to the improved corridors has improved noticeably. Third, costs turned out to be slightly lower than expected. Fourth, works were completed as planned, and they serve the planned functions. Fifth, in general the benefits of the project will apparently be sustainable, with normal maintenance.

ECONOMIC RATE OF RETURN SUMMARY

COMPONENT	FYRR (VOC Only)		IRR. (VOC Only)	
	PCR	SAR	PCR	
SURABAYA				
Jl. Dupak	35	24	31	
Jl. Sungkono	46	26	38	
BANDUNG				
Jl. Lingkar Selatan Barat	73	32	42	
Jl. Lingkar Selatan Timur	20	17	18	
MEDAN				
Jl. Sisingamangaraja I	19	48	16	
Jl. Bakti	18	28	15	
Jl. Halat	(a)	27(c)	(a)	
Jl. Sutrisno	(a)	15(c)	(a)	
Jl. Sisingamangaraja II	23	60	17	
Jl. Pattimura I	18	28	16	
Jl. Juanda	31	34	27	
Jl. Aksara	30	21	27	
SEMERANG				
Jl. Kaligawe I + Bridge	32	18	28	
North Ring Road (b)	18	28	16	
	Average	30	25	

(a) Under Construction

(b) Includes North Ring Road I and II

(c) Excluded from average for comparison purposes.

SAR Staff Appraisal Report, February 1987

PCR Project Completion Report

6. CONSIDERATIONS AND LESSONS FOR THE FUTURE

6.1. The SAR puts forward suggested guidelines concerning the form and content of a future project. However, these guidelines were conceived more than five years ago when political, financial and technical considerations were very different to those of today. Accordingly, such guidelines must be reviewed in the light of today's climate. This project has clearly demonstrated that it is rich in lessons that can be beneficially adapted for future application. The purpose of this section is to present some of the principal considerations, resulting from the experiences of RCUTP, that influence the form and approach to future urban transport investment initiatives. For further amplification of these issues and other related matters, the reader is referred to the report entitled 'Evaluation of RCUTP With a View to Future Project Preparation'.

6.2. This project's results have been convincing. It produced the products it set out to achieve, disbursed quickly and will, in most cases, sustain benefits for sometime into the future. Experience has shown that frustration may impend if a future project attempts major changes in local government establishments on the basis of devolution of limited project powers, responsibilities, and loan funds to the cities. It is not too soon to take this lesson to heart, since current project preparation work foresees a project, with similar attempts at institutional changes in cities. The desired changes are undoubtedly closer at hand now that the legislative framework is almost in place, but are they close enough to involve in a future project?

6.3. The importance of giving attention to the ordinary detail of project arrangements has been highlighted by this project. For example, quality control did occasionally present a problem. This was due to a number of reasons not least being the involvement of too many participants in the contracting process which strained the line of control of the Project Manager. However, Bina Marga has now adapted the traditional Supervision Engineer's role in the construction process. He no longer reports to the Project Manager but direct to the RBO/PBO and this will substantially strengthen the monitoring and control process. Additionally, Supervision Consultants are now more thoroughly vetted and their performance monitored as part of a performance ranking system. Project Managers are now given more extensive training than previously. These positive developments have been directly influenced by this project and should have a lasting effect on Bina Marga managed projects.

6.4. This project has demonstrated that complex transport programmes involving multi-year, multi-project components can be planned and successfully implemented in Indonesia by some government agencies. The RCUTP, with its strong city focus, exposed both central and city governments to financial and technical planning, project management and control. No agencies had previously been involved in such a comprehensive exercise. This Project's experience clearly established that, for a number of important reasons, the cities are not yet capable of adopting the full range of responsibilities which this type of project demands. Consequently it would be premature to consider future similar projects having cities as their focus of control and mayors as the major representatives of their clients. On the other hand, Dir. Gen. Bina Marga has over 7 years continuous and direct experience of the Project. It has developed substantial management capabilities and has demonstrated that with technical assistance it can undertake and successfully execute such a project.

6.5. Nationally, there was and remains an acute shortage of Local Government personnel with significant traffic or transport experience. This is not simply a question of recruitment from other sectors. The shortage is endemic. Future projects should not underestimate the degree of technical assistance cities may need. Technical assistance alone will not establish the lasting competence which those cities need. Substantial manpower development and training programmes will also be required.

6.6. An important finding of the Project is that the devolution of transport responsibilities to competent city authorities remains the most important single requirement for improved urban transport. Experience shows that Local Governments are extremely reluctant to adopt and commit resources to fulfilling responsibilities which are not supported by the appropriate legislation. That legislative framework was not available during this Project and as a result the benefits for certain aspects of the work were not fully realised. However, the physical works programmes in all four cities were successfully implemented within budget, within programme and, with few exceptions, are likely to sustain their full expected benefits. This demonstrated that the risks of twinning institutional development goals with physical transport improvement goals in the one project need not result in failure if either one is not fully successful. As the full legislative framework for devolution is now almost in place, a future Project should incorporate and address both topics with some confidence.

6.7. The RCUTP evolved as a predominately highway project. Integration and co-ordination with agencies representing non-highway aspects of urban transport was primarily achieved via the PMU liaison procedures. This appeared to be effective. However, future projects are likely to have a broader technical base in terms of transport modes and comprehensive city planning. This should be reflected in the organisation of the Project, possibly with a wider agency representation in the PMU.

6.8. Also, city participation in the RCUTP was initially slow. This was partly due to the absence of the necessary institutional framework. It was also partially due to the cities playing a relatively minor role in the planning and management of it. As the devolution process evolves, future projects will become increasingly city orientated and again this should be reflected in the Project's organisation.

6.9. The RCUTP is regarded as a successful project. It produced the physical works it set out to, disbursed satisfactorily and should realise the majority of benefits that are expected of it. Although replication in other cities suffering from a historic underfunding of transport projects may be worthy of consideration, experience has shown that in rapidly growing cities a short-term, traffic engineering approach to transport management can overlook the insidious development of serious infrastructural problems. In most cities, if not all, strategic transport routes are being subsumed by the expanding urban area. This results in regional traffic being engulfed by urban activities, the urban road hierarchy losing form and effectiveness, and environmental deterioration.

6.10. The studies conducted in this Project (notably for Surabaya and those in the support of the IUIDP) demonstrated the benefits of a strategic planning approach to city transport development. This also applied to short term transport management work where, without an overview of the strategic situation, it was difficult to determine the proper function of a

road section and hence the principles behind its solution. In other cases the solution to a local traffic problem was not to be found at that location but elsewhere in the network.

6.11. Today's cities are much larger and their problems more complex than when the RCUTP commenced. The approach to transport management necessarily changes as cities develop and as the demands for transport increasingly exceed what can be realistically provided. transport policy moves from demand satisfaction to demand prioritisation to traffic demand/restraint. As it changes so does the planning methodology, the types of solutions and the investment programmes. It is considered that the satisfaction of the unrestrained demands for travel is no longer a viable approach to transport in the biggest Indonesian cities. The need to apply more sophisticated and co-ordinated measures to address the increasingly complex transport is clear.

6.12. The emergence of the IUIDP as a co-ordinator of city investments and programmes is a welcome move towards comprehensive development planning. It is one that Bina Marga has directly supported through the RCUTP, and in many other cities through its every day work, because it concurs with Bina Marga's "Urban Roads Development Strategy", particularly in its aim to achieve economic efficiency within the transport sector and between it and other development sectors. The IUIDP process is still developing and as yet it does not cover all cities, nor all planning horizons. Additionally it very much focuses on investments and budgets as opposed to the plans and schemes behind them. As transport is by far the most costly and most difficult of infrastructure to establish once development has taken place, it would not be unreasonable for road development agencies to take an early and leading role in this strategic planning work, particularly where the IUIDP process is not yet sufficiently well established.

6.13. Because this Project was largely pioneering in its scope and scale, many changes to its form and content had to be made during its preparation and implementation. This was achieved without losing sight of its goals by adopting a flexible and pragmatic attitude to it. The IBRD, and Consultants fully supported the Government of Indonesia in this approach. This could have been more readily accommodated within the Project had there been a greater provision for contingencies, particularly with regard to technical assistance contracts.

6.14 The conclusion is that this project has been a great success and has produced a satisfactory rate of return enhanced by the pre-project backlog of transport investments. For the reasons discussed above, future urban road investments can no longer be justified solely on the basis of sustained speed improvements. Similarly, future projects can only be deemed acceptable if long run environmental effects are demonstrated to be positive or neutral. Although their efficacy cannot be demonstrated by the project being reviewed, the use of relatively simple and robust models to analyze urban transport alternatives, within a framework that takes account of the very rapid growth expected in the size and population of cities, would allow future projects to be evaluated with much greater confidence.

PART III: STATISTICAL INFORMATION

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Table 1: RELATED BANK LOANS/CREDITS

Loan/Credit Title	Purpose	Year of Approval	Status
Loan 2816-IND Urban Sector Loan	Infrastructure Development and Institutional Development	1987	Completed
Loan 2932-IND Jabotabek Urban Development Project	Road construction, improvement, rehabilitation and maintenance, traffic management and institutional development in Jabotabek metropolitan region	1988	Active

Table 2: PROJECT TIMETABLE

Steps in Project Cycle	Date Planned	Actual Date
Identification		October 1984
Preparation		April 85 - April 86
Appraisal		May 96
Negotiations		April 87
Board Presentation		May 87
Signing		May 87
Effectiveness		August 87
Project Completion		April 1993
Loan Closing	October 1994	December 1993

Table 3: PLANNED AND ACTUAL COMPLETION DATES OF COMPONENTS**3A: ROAD CONSTRUCTION**

City/road Link name	Agency financially responsible	Type of improvement	SAR Estimate		Actual Length (km)	Actual		
			Length (km)	Start of construction		Start	Finish	
Surabaya								
Dypal	BM	W	1.85	1987/88	1.85	4/87	3/89	
Sungkono	BM	W	2.96	1987/88	1.85	6/87	2/89	
Jl. Adityawaarman	BM	W	(Not specified at Appraisal)		0.63	4/88	2/89	
Jl. Kura/Ciliwung	BM	W	(Not specified at Appraisal)		1.74	4/88	2/89	
Jl. Dupak/Tanjung Sari	BM	W	(Not specified at Appraisal)		1.30	12/89	11/90	
Jl. Tanjung Sari/Banyu Urip	BM	W	(Not specified at Appraisal)		2.05	1289	11/90	
	Subtotal		4.81		9.70			
Bandung								
Lingkar SW	BM	W	3.76	1987/88	3.72	4/87	10/90	
Lingkar SE 1	BM	NR	1.87	1989/90	1.95	4/88	9/90	
Lingkar SE 2	BM	NR	2.68	1989/90	2.61	4/88	12/90	
Jl. Cikawao	CITY	W	(Not specified at Appraisal)		0.42	7/91	1/92	
Jl. Ciateul II	CITY	W	(Not specified at Appraisal)		0.65	7/91	1/92	
	Subtotal		8.31		9.35			
Medan								
Sisingam I	BM	W	1.22	1987/88	0.50	5/88	7/89	
Bakti	CITY	W	1.10	1988/89	1.80	7/88	3/90	
Halat	CITY	W	1.55	1989/90	1.80	2/91	5/93	
Aksara	BM	W	1.80	1990/91	1.80	5/88	7/89	
Sutriano	CITY	W	1.20	1989/90	1.18	5/91	12/92	
Sisingam 2	BM	W	1.25	1988/89	0.65	5/88	7/89	
Pattimura 1	BM	W	2.30	1989/90	1.25	6/87	2/88	
Juandu	BM	W	1.14	1990/91	1.10	5/88	9/89	
Pattimura 1A	BM	W	(Not specified at Appraisal)		1.03	5/88	9/89	
	Subtotal		11.56		10.86			
Semarang								
Kaligawe 1	BM	W	2.64	-	2.19	3/88	5/89	
Siliwange 2	BM	W	1.96	-	(Funding Priority Diverted to North Ring Road)			
Banjir Br.	BM	W	0.96	-	0.07	5/87	12/89	
North Ring Rd (10 components)	BM	NR/W			14.41	5/87	3/92	
	Subtotal		4.60		16.67			
	Total				46.54			

Table 3B: CORRIDOR IMPROVEMENTS

City/road Link name	Agency financially responsible	SAR Estimate		Actual Length (km)	Actual	
		Length (km)	Start of construction		Start	Finish
Surabaya						
East-West link	CITY	2.41	1988/89	0.52	10/88	12/89
Subtotal		2.41		0.52		
Bandung						
Corr. Kiaracg. 1	CITY	1.50	1987/88	1.51	6/87	3/89
Siliwangi Timur	CITY	(not specified at Appraisal)		0.72	8/88	10/89
Siliwangi Bridge	CITY	(not specified at Appraisal)		0.03	12/88	10/89
Subtotal		1.50		2.26		
Medan						
Corr. Warni + Br.	CITY	0.85	1987/88	0.90	6/89	5/91
Corr. Sising	CITY	1.20	1987/88	1.14	5/87	3/89
Subtotal		2.05		2.04		
Semarang						
Corr. 1 W	CITY	1.30	1987/88	1.91	4/87	2/88
Corr. 1 E	CITY	2.33	1989/90	6.37	6/88	12/89
Corr. 1 NW	CITY	1.35	1988/89	1.91	5/89	1/90
Corr. 1 NE	CITY	2.39	1989/90	1.55	5/89	3/90
Corr. 4 (part)	CITY	0.47	1987/88	-		
Subtotal		7.84		11.74		
Total		13.80		16.56		

Table 3C: TRAFFIC MANAGEMENT

City	1987/88	1988/8	1989/90	1990/91	1991/92	Total
Medan						
Junction A.I (km)	-	-	5.03	3.70	1.60	10.33
Signs	1,260	-	104	357	33	1,754
Rd. Marking (sq m)	3,700	-	2,565	8,652	4,400	19,317
Bandung						
Junction A.I. (km)	5.44	4.79	0.89	0.40	1.60	13.12
Signs	542	-	-	-	70	612
Rd. Marking (sq m)	4,417	10,000	1,100	2,778	3,648	21,943
Semarang						
Junction A.I. (km)	5.93	2.20	-	0.75	-	8.88
Signs	-	192	-	94	-	286
Rd. Marking (sq m)	9,500	1,850	7,276	1,442	-	20,068
Surabaya						
Junction A.I. (km)	3.72	-	1.11	3.20	3.60	11.63
Signs	2,270	-	235	-	-	2,505
Rd. Marking (sq m)	4,000	-	8,200	8,990	1,640	22,830
Total						
Junction A.I. (km)	15.09	6.99	7.03	8.05	6.80	43.96
Signs	4,072	192	339	451	103	5,157
Rd. Marking (sq m)	21,617	11,850	19,141	21,862	9,688	84,158

Junction A.I. - Junction Approach Improvements.

Table 4: SUMMARY OF PROJECT COSTS

	Appraisal Estimate			Actual/Latest Estimate		
	Local (\$m)	Foreign (\$m)	Total	Local (\$m)	Foreign (\$m)	Total
Civil Works	24.5	29.1	53.6	28.1	34.7	62.8
Equipment	1.9	5.7	7.6	1.0	3.1	4.1
Consultant Services and Training	4.6	7.9	12.5	3.8	12.7	16.5
Unallocated	6.1	8.4	14.5	0	0	0
Total	37.1	51.0	88.1	32.9	50.5	83.4

**Table 5: LOAN DISBURSEMENTS: CUMULATIVE ESTIMATED AND ACTUAL
(US\$ million)**

Fiscal Year	Appraisal Estimate	Actual Amount	Actual as % of Estimated
1987			
June 1987			
1988			
September 1987	0.40	0.02	5
December 1987	0.80	0.48	60
March 1988	1.65	8.69	520
June 1988	2.50	12.04	482
1989			
September 1988	3.75	14.35	385
December 1988	5.00	17.41	348
March 1989	7.00	23.89	341
June 1989	9.00	30.14	334
1990			
September 1989	11.70	30.27	259
December 1989	14.40	32.16	223
March 1990	17.30	33.91	136
June 1990	20.20	38.58	191
1991			
September 1990	23.10	39.70	172
December 1990	26.00	42.82	165
March 1991	29.05	45.05	155
June 1991	32.10	46.18	144
1992			
September 1991	34.60	47.64	138
December 1991	37.10	47.57	128
March 1992	39.20	48.82	125
June 1992	41.30	49.88	121
1992			
September 1992	43.00	49.88	116
December 1992	44.70	49.72	111
March 1993	45.80	50.12	109
June 1993	46.90	50.12	107

Fiscal Year	Appraisal Estimate	Actual Amount	Actual as % of Estimated
1993			
September 1993	47.90	50.12	105
December 1993	48.90	50.52	103
March 1994	49.70	50.52	102
June 1994	50.50	50.52	100
1994			
September 1994	50.75	50.52	99.5
December 1994	51.00	50.52	99

**Table 6: PROJECT FINANCING
(US\$ million)**

Agency	Local funds	Bank loan		Total
		To BINA MARGA as grant	To Project Cities as loans	
BINA MARGA	18.6	18.4	0.0	37.0
Bandung	1.9	0.0	2.4	4.3
Medan	4.8	0.0	6.0	10.8
Semarang	3.6	0.0	4.4	8.0
Surabaya	4.0	0.0	5.0	9.0
BINA MARGA (TA)	0.0	14.3	0.0	14.3
Total	32.9	32.7	17.8	83.4

**Table 7: DIRECT BENEFITS
(Completion of Physical Targets)**

Component	SAR	Actual
Civil Works		
Road Construction (km)	29.28	46.54
Corridor Improvements (km)	13.80	16.56
Traffic Management		
Junction Access Improvements (km)	Detail not specified	43.96
Signing (signs)	Detail not specified	5,157
Road marking (sq m)	Detail not specified	84,158
Road Maintenance		
Periodic/Rehabilitation/Upgrading (km)	Detail not specified	183.22
Equipment		
Signalized Junctions	143	107
Road Maintenance Equipment	See Table 8	See Table 8
Training		
Course categories	9	8
Workshops	4 cities	4 cities

**Table 8: ROAD MAINTENANCE EQUIPMENT
(Completion of Physical Components)**

Type of equipment	Bandung		Medan		Semarang		Surabaya		Total	
	SAR	Actual	SAR	Actual	SAR	Actual	SAR	Actual	SAR	Actual
Pneumatic roller	1	-	1	-	1	-	-	-	3	-
Tandem roller	-	1	1	-	1	-	-	-	2	1
Pedestrian roller	-	8	-	7	2	5	4	7	6	27
Towed asphalt kettle	3	-	-	4	2	-	-	2	5	6
Grader	-	-	-	-	1	-	1	-	2	-
Wheeled excavator/loader	1	-	-	-	1	-	1	1	3	1
Tractor, bucket, blade	2	-	2	-	2	-	2	-	8	-
Street sweeper	2	-	2	-	2	-	2	-	8	-
Concrete mixer (large)	2	-	2	-	2	-	2	1	8	1
Concrete mixer (small)	2	3	3	7	2	5	3	3	10	18
Concrete vibrator, 4 hp	2	2	2	4	2	4	3	2	9	12
Tamper vibrator plate, 4 hp	3	7	4	7	2	6	5	4	14	24
Air compressor	-	4	1	2	2	2	2	2	5	10
Lubrication jeep	1	-	1	-	1	-	1	-	4	-
Sky calker	1	1	1	-	1	-	1	-	4	-
Pedestrian road marker	2	1	2	2	1	1	3	2	8	6
Generator and lights	1	1	1	-	1	1	1	1	4	3
Electric welder	1	2	1	1	1	1	1	1	4	5
Acetylene welder	1	-	1	-	1	1	1	1	4	2
Water pump	3	4	4	6	3	6	5	5	15	21
1-ton trailer	2	2	2	6	2	1	2	1	8	10
Automatic Traffic counter	NS	-	NS	1	NS	-	NS	4	NS	5
Vibrating roller 2.5 tn	NS	3	NS	-	NS	-	NS	-	NS	3
Bitumen distributor	NS	-	NS	1	NS	-	NS	-	NS	1
Petrol breaking hammer	NS	-	NS	4	NS	-	NS	6	NS	10
Circular saw	NS	-	NS	3	NS	1	NS	6	NS	10
Cable detector	NS	-	NS	1	NS	-	NS	3	NS	4
Water tank	NS	-	NS	-	NS	-	NS	1	NS	1
Asphalt recycler and mobile reheater (Pachman)	NS	-	NS	-	NS	-	NS	1	NS	1

NS - Not specified.

Table 9: PROJECT STUDIES

Description	Purpose (As defined at appraisal)	Status	Impact
Bandar Lampung, Pontianak, Denpasar, Palembang, Ujang Pandang Feasibility and Project Identification Studies	Prepare for a future regional cities urban transport project	Completed	Outputs used to identify physical works components in IUIDP projects
Institutional Review	Develop proposals to strengthen managerial and technical capabilities in project, traffic and road maintenance management in project cities	Completed	Proposals for project management and road maintenance implemented during project

Table 10: ECONOMIC BENEFITS

Component	FYRR	ERR	
	(VOC Only)	(VOC Only)	
	Actual	SAR	Actual
Surabaya			
Jl. Dupak	35	24	31
Jl. Sungkono	46	26	38
Bandung			
Jl. Lingkar Selatan Barat	73	32	42
Jl. Lingkar Selatan Timur	20	17	18
Medan			
Jl. Sisingamangaraja I	19	48	16
Jl. Bakti	18	28	15
Jl. Sisingamangaraja II	23	60	17
Jl. Pattimura I	18	28	16
Jl. Juanda	31	34	27
Jl. Aksara	30	21	27
Semarang			
Jl. Kaligawe I Bridge	32	18	28
North Ring Road *	18	28	16
	Average	30	25

- * - Includes North Ring Road I and II
SAR - Staff Appraisal Report, April 1987
VOC - Vehicle Operation Cost.

Table 11: COMPLIANCE WITH LOAN COVENANTS AND CONDITIONS

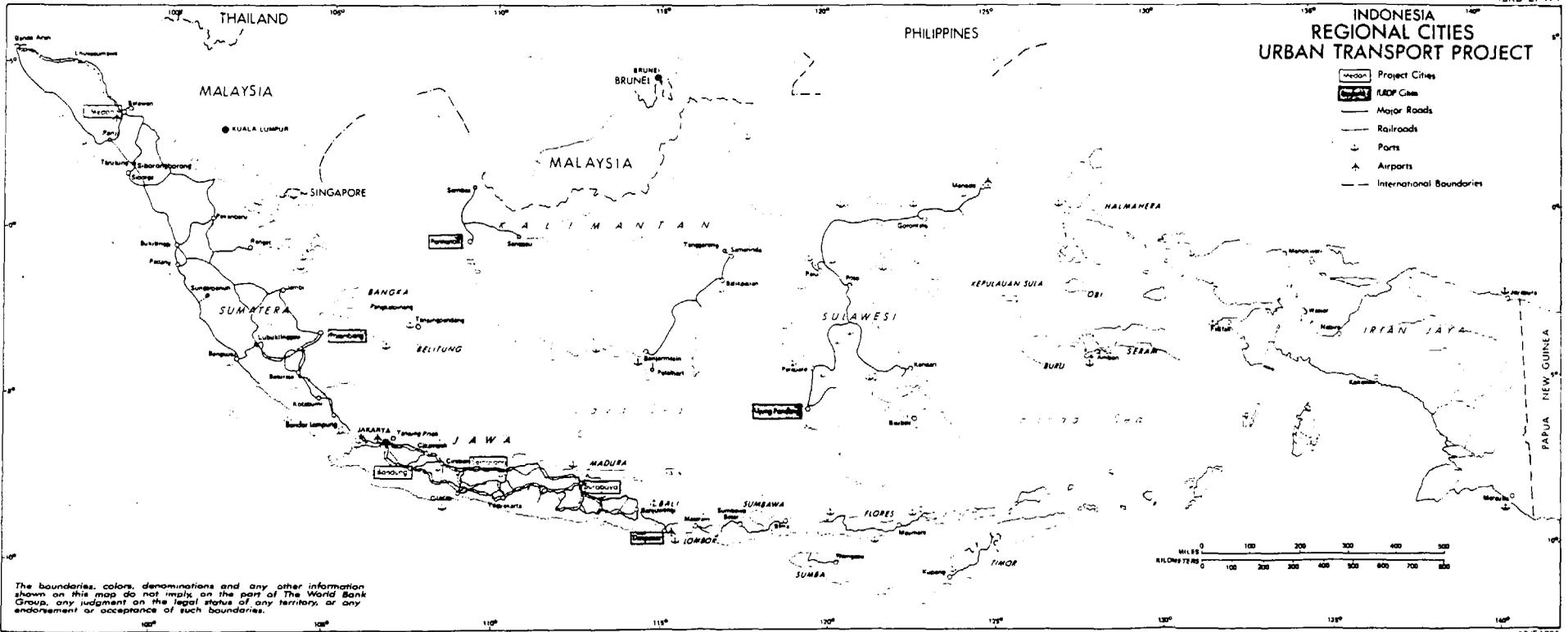
Brief Description of Loan Covenant	Reference to Loan Agreement	Target Date (if any) for Compliance	Current Status	Remarks
Enter into a Subsidiary Loan Agreement with each of the Project Cities, under terms and conditions approved by the Bank	3.03(a)		Full Compliance	
Cause financial records and accounts to be maintained by the Project Cities and other departments or agencies of the Borrower in respect of the Project	4.01(a)		Full Compliance	
Submit auditors' report to the Bank	4.01(b) (i), (ii)	Not later than nine months after the end of each fiscal year	Full Compliance	Delays in production initially experienced
Auditors' report to contain a separate statement supporting the reliance of procedures and controls with respect to withdrawals based on Statement of Expenditure	4.01(c) (iv)		Full Compliance	
With respect to Loan withdrawals made on the basis of statements of expenditure, retain all records for inspection by the Bank	4.01(c) (ii)-(iv)	At least one year after receipt of the audit report by the Bank	Full Compliance	
Maintain in Binkot a Project Management Unit responsible for the supervision of the execution of the Project	Sched. 5.1		Full Compliance	
Cause each Project City to maintain a CPCO, staffing to include a Chief, separate Project Managers for Bina Marga and City Project components and a staff accountant	Sched. 5.2		Full Compliance	
Through Bina Marga enter into agreements with the Project Cities and the Provinces establishing a road classification system defining financial arrangements as follows: - Each Project City responsible for all maintenance of roads apart from periodic maintenance and rehabilitation of primary roads which is the responsibility of Bina Marga; - Detailed maps showing road classification	Sched. 5.3		Full Compliance	

Brief Description of Loan Covenant	Reference to Loan Agreement	Target Date (if any) for Compliance	Current Status	Remarks
Cause the Project Cities to carry out a review of arrangements for planning and provision of urban transport services including traffic engineering and road maintenance	Sched. 5.4	April 1988	Full Compliance	
- Furnish to the Bank for comments the results of the review;		Oct 1988	Full Compliance	Completed March 1989
- Prepare an action plan satisfactory to the Bank				Partial Compliance
- Carry out such action plan				
Cause each Project City to prepare and furnish to the Bank for comment, after review by the PMU, a proposed rolling 5-year urban transport investment program, not later than December 1 in each year:	Sched. 5.5			
- first program		Dec 1987	No Compliance	Lack of legislation
- first revision		Dec 1987	Full Compliance	and associated human
- second revision		Dec 1987	Partial Compliance	resources and funding

**Table 12: STAFF INPUTS
(under preparation)**

Stage of Project Cycle	Planned (weeks)	Revised (weeks)	Actual
Through Appraisal			109.6
Appraisal through Board Approval			9.6
Board Approval through Effectiveness			
Supervision	76.0	109.5	97.5
Completion			
Total			217.6

INDONESIA REGIONAL CITIES URBAN TRANSPORT PROJECT



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IMAGING

Report No: 15245
Type: PCR