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Report No. 19375

**IMPLEMENTATION COMPLETION REPORT**

**SRI LANKA**

**THIRD ROADS PROJECT**

**CREDIT No. 2183 - CE**

June 21, 1999

Infrastructure Sector Unit  
South Asia Region

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**CURRENCY EQUIVALENTS**

Currency Unit - Sri Lanka Rupee (Rs)

Appraisal year, 1990	US\$1.00	=	Rs 40.0 (at appraisal)
Mid term review, 1994	US\$1.00	=	Rs 49.4 (annual average)
Completion year, 1998	US\$1.00	=	Rs 64.6 (annual average)

**WEIGHTS AND MEASURES**

Metric System

**ABBREVIATIONS AND ACRONYMS**

ADB	-	Asian Development Bank
CATB	-	Cabinet Appointed Tender Board
CM&C	-	Construction Management and Contracts
EDCF	-	Economic Development Cooperation Fund (Korea)
GOSL	-	Government of Sri Lanka
ICTAD	-	Institute for Construction Training and Development
INC-CPT	-	Inter-Ministerial Committee for Coordination and Planning of Transport
MHH&SS	-	Ministry of Health, Highways, and Social Services
MOF	-	Ministry of Finance
MPPI	-	Ministry of Planning and Policy Implementation
MTH	-	Ministry of Transport and Highways
NTC	-	National Transport Commission
NMT	-	Non-Motorized Transport
OECF	-	Overseas Economic Cooperation Fund (Japan)
ODA	-	Overseas Development Administration
PC	-	Provincial Council
PMMU	-	Project Management and Monitoring Unit (of RDA)
RCDC	-	Road Construction and Development Company
RDA	-	Road Development Authority
RDC	-	Resources Development Consultants Ltd.
SEC	-	State Engineering Corporation
SD&CC	-	State Development and Construction Corporation
SLR	-	Sri Lanka Railways
SWKP	-	Scott, Wilson, Kirkpatrick and Partners
TEC	-	Technical Evaluation Committee
TSPC	-	Transport Studies and Planning Centre
TSSS	-	Transport Sector Strategy Study

**FISCAL YEAR OF BORROWER**

January 1 - December 31

Vice President	Mieko Nishimizu
Country Director	Mariana Todorova
Sector Director	Frannie Humplick
Team Leader	Juan Gavia
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# **IMPLEMENTATION COMPLETION REPORT**

## **SRI LANKA THIRD ROADS PROJECT (Credit 2183 – CE)**

### **PREFACE**

This is the Implementation Completion Report (ICR) for the Third Roads Project in Sri Lanka, for which credit 2183-CE in the amount of SDR 30.6 million (US\$42.5 million) received Board approval on November 6, 1990 and was made effective on February 21, 1991.

The credit was closed on December 31, 1998, compared with the original closing date of June 30, 1998. Final disbursement was made on June 2, 1999. A balance of approximately SDR 235,000 (US\$316,095.14) is remaining in the special account and will be refunded. After this refund is received a balance of approximately SDR 3.5 million (US\$4.7 million), or 11.4% of the original amount, is expected to be canceled.

The ICR was prepared by William Denning for the South Asia Region and reviewed by Juan Gaviria, Team Leader, and Jaswant Channe, Task Leader. The Borrower provided comments that were incorporated and are included as Annex B to the ICR.

Preparation of this ICR was started during IDA's final supervision/completion mission, November 11-24, 1998. It is also based on material in the project file, discussions with IDA staff, including input from Brendan Kennedy, Consultant, and periodic management reports prepared by the Borrower. The Borrower contributed to the preparation of the ICR by: (a) providing views reflected in the completion mission's Aide Mémoire (Annex A), (b) preparing their own evaluation of the project's execution (Annex B), (c) preparing an economic re-evaluation (Annex C), (d) commenting on the draft ICR, and (e) participating in a stakeholders' workshop held on May 19, 1999 in Colombo.

**IMPLEMENTATION COMPLETION REPORT**  
**SRI LANKA**  
**THIRD ROADS PROJECT**  
 (Credit 2183 – CE)

**EVALUATION SUMMARY**

**Introduction**

1. The Third Roads Project was a follow up to previous IDA lending operations in the sector. The project funded road rehabilitation and bridge reconstruction civil works which were a priority to fill in gaps in the strategic highway network. The project was a traditional road rehabilitation operation; it focused mainly on physical achievements with some institutional development objectives.

**Project Objectives**

2. The project's objectives were to: (a) reduce road transport cost and delays for passengers and goods by restoring major trunk roads to better operational condition, (b) help restore priority road infrastructure damaged by flooding and landslides in May/June 1989, (c) enhance institutional capabilities to increase the quality and extent of road maintenance and rehabilitation, and (d) upgrade the Road Development Authority's (RDA) capacity to supervise and execute rehabilitation works and to identify actions needed to develop the local road contracting industry.

3. The project's overall scope took into account the availability of resources for counterpart financing and the limited absorptive capacity of the implementing agency. The benefits of the project were expected to be distributed widely among all segments of the population. The project was expected to support private sector involvement in the road sector through assistance to the local contracting industry. The objectives were straightforward, in line with the country's needs, and supported IDA strategy in the highway subsector at appraisal. The project components were directly linked to the project objectives.

**Implementation Experience and Results**

4. The overall rating of the project is satisfactory. The objectives to reduce road transport costs and delays, and to help restore road infrastructure damaged by flooding were met by the physical achievements of the project. The main physical objectives were substantially met after some delays. Of 417 km of roads initially appraised, 387 km were contracted and 310 km were completed. Of this 310 km, 92 km were completed with funding from Economic Development and Cooperation Fund (EDCF - Korea). From a total of 19 bridges, 13 were completed. RDA is currently completing the outstanding works using its own resources. Even though the completed construction was less than appraised and less than awarded, the economic rates of return expected by the road investments were achieved or exceeded.

5. The project's institutional development objectives (paragraph 2 above) were only partially achieved. These included:

- strengthening of RDA's administration of projects,
- improvement of RDA's highway and bridge design standards, manuals, and procedures, and
- support of the local consulting and contracting industries through their direct involvement in the project.

- improvement of the technical skills of some of RDA's engineers through secondment to supervision consultants,

6. RDA's project management and administrative capabilities were improved under the project through the establishment of a Project Management and Monitoring Unit (PMMU) in RDA initially staffed with consultants. PMMU has been successfully operating with only RDA staff since April 1997. RDA has now expanded the responsibilities of the PMMU to include managing and administering all foreign-aided development projects in the highway subsector.

7. The project's Technical Assistance component was focused on improving road user revenues, the local construction industry, and maintenance standards and design. A Road User Charges Study investigated the benefits received by, and charges currently levied upon, the different types of road users and recommended increases in user fees for two types of user. Because of their macroeconomic implications, the study recommendations were referred to MOF/Planning, but implementation of the recommendations has not taken place, and the matter still rests with MOF.

8. A domestic Construction Industry Study was satisfactorily completed by the Institute for Construction Training and Development (ICTAD). The recommendations on resolving contracting difficulties in Sri Lanka were endorsed by the Government of Sri Lanka (GOSL) and implemented by RDA and ICTAD with the assistance of the Contractors' Association. The local civil engineering and construction industry has benefited as a result. A Materials, Highway and Bridge Design Study resulted in RDA publishing and disseminating manuals for: highway geometric and pavement design appropriate to Sri Lankan conditions; bridge design; bridge construction; bridge maintenance; and standards for road construction; rehabilitation; and maintenance, including amendments to legal standards.

9. The development of the local contracting industry received a boost under the project even though some local contractors did not perform well. Following the completion of the construction industry study, agreement was reached among RDA, ICTAD and IDA on the participation of local contractors in the road and bridge rehabilitation program. Most of these contractors satisfactorily completed their works and gained considerable experience in future contracting work.

10. Project implementation was affected by three major factors. (1) *Timeliness of decision making*. The lengthy GOSL procedures for clearance of standard contract documentation, tender evaluation, and contract award caused major delays in project implementation. There were also delays in obtaining the necessary quarrying licenses despite the active support of RDA. (2) *Inexperience of local contractors*. Mobilization by some local contractors was slowed by their inadequate financial management and experience. Advance payments were not always managed well, leading to cash flow problems in the early stages of the contract. (3) *Inexperience of international contractor*. One contractor and one contract accounted for the bulk of the problems in this project. This may have been exacerbated by the contractor's inexperience in road construction relative to other types of civil engineering. Weak pre-qualification screening may also have contributed to this situation.

### **Summary of Findings, Future Operation, and Key Lessons Learned**

11. As stated above, the overall outcome of the project was satisfactory. This rating is based on the satisfactory, if partial, achievement of the physical objectives; achieving or surpassing the economic rates of return (ERRs) expected at appraisal; on the improved institutional capacity of the RDA; and the development of the local contracting industry. The overall ERR expected at appraisal was 33%; the re-evaluated overall ERR is 52%. The project would have been highly

satisfactory if better project management for road contract WB3/3 had resulted in problems being acted upon in time to have an alternate contractor complete the proposed works.

12. Overall sustainability is uncertain. GOSL has recognized the benefits of better road maintenance and has been increasing the appropriate budget (RDA's budget is supplied from GOSL general revenue). Also on the positive side, the RDA's commitment of resources for maintenance has improved during the course of the project. There has been a steady trend to higher expenditures on maintenance in real terms. On the other hand, it is still not clear that spending is sufficient to guarantee sustainability of the road system. The fact that recommendations for road user charges have not been implemented (paragraph 7 above) is a further impediment to sustainable financing of road maintenance.

13. IDA performance in project identification was found to be satisfactory. The project was a continuation of earlier road development projects supported by IDA. Preparation assistance was satisfactory. During project preparation an effort was made to make better use of local consultants, backed up by international consultants, to establish the details of the investments required. The appraisal work was satisfactory. IDA supervision of the project and progress reporting was satisfactory, and the performance ratings were appropriate. The slow progress in the execution of the contracts and the control of costs were the main concerns of IDA's supervision missions. The delays in the execution resulted mainly from the unsatisfactory performance of one of the two expatriate contractors and from the inexperience of most of the local contractors.

14. Overall the Borrower's project identification and preparation activities were satisfactory. The performance of the Borrower in implementing the project was generally satisfactory. Expatriate consultants in joint venture with a local consultant assisted RDA in the supervision of road works. Their performance was less than satisfactory on occasion. Local consultants were involved in the design of road works and performed satisfactorily.

15. Compliance with project covenants was satisfactory. The Borrower's actions in project operation have been satisfactory. RDA has supported PMMU with adequate staffing and resources since April 1997, and PMMU is, in its present form, sustainable.

16. In support of IDA's Transport Sector Strategy, future IDA involvement in the sector should address institutional change and policy reform of RDA. This should assist RDA to move from a public oriented to a mixed model agency, to improve the efficiency of management of strategic needs and improve human resource development. RDA has developed a priority investment plan for the next decade which requires substantial resources for development and maintenance. District Plans are under development. Since GOSL will not be able to substantially increase the budget for roads, it will be necessary to (a) increase the efficiency of expenditures, (b) identify new sources of financing, (c) attract private investment to complement public sector investment, and (d) increase attention to sustainable and effective maintenance.

17. Future investments in the highway sector must balance maintenance with upgrading of strategic roads to provide additional road capacity. Past IDA projects have been concerned mainly with the physical rehabilitation of road pavements only. No realignment improvements or new alignments have been built, and no substantial increase in road capacity has been provided.

18. With the recent devolution of 15,300 km of roads to the Provincial level and the gradual emergence of road agencies for these subnational levels of government, there is an opportunity for RDA and external funding agencies to assist the newer agencies in developing their maintenance capability, including identification of sustainable maintenance funding sources. The devolution allows RDA to focus more clearly on the strategic network and increases the responsibility of the Provinces for the local road network. If well managed, devolution will enhance efficiency of expenditures.

19. The key lessons learned from the project are as follows (the paragraph numbers below refer to Part I - Project Implementation Assessment):

- Institutional reform is needed to enable RDA to move from a public oriented agency to a mixed agency and should: (a) improve efficiency through outsourcing of maintenance to contractors, (b) incorporate information technology in road management, (c) create an owner/provider model, (d) develop environmental and social safeguards in road development and maintenance, and (e) streamline management and decision-making. External financing agencies will play a major role in supporting RDA in the reform process as part of road sector lending. The availability of large external aided support, with limited conditionality, for new road development is a factor to take into consideration. Any future road sector lending should be preceded by a dialogue on reform with GOSL, RDA, and other major donors (paragraphs 28, 30, 56, 66).
- GOSL should empower the Tender Committee and a revise the clearance procedures for the approval of bid documents to ensure timely contract awards. This could minimize project delays and improve decision-making (paragraphs 30, 56, 60).
- During project design greater attention should be placed on: (a) planning and prioritization of investments, (b) holistic design to address safety issues, environment, and social safeguards, (c) monitoring and evaluation systems including performance indicators, and (d) sustainability, including funding and mechanisms for road safety. Appropriate design and standards, including attention to resettlement, environment, and alignment considerations, are critical to achieve efficient and effective results in construction and maintenance (paragraphs 42, 60, 69, 70, 71).
- Support for local contractors needs to be improved, especially when fostering development of a new set of private sector companies. The lack of adequate working capital resulting from inexperience in financial management delayed several contractors (paragraphs 27, 31). Consideration should be given to a more comprehensive development program for the private construction sector as a whole, including more than simply updating government standards. There is also a need to have an adequate stream of on-going construction contracting, to provide the newly created industry with a steady supply of work (paragraph 40).
- Decentralization of responsibility for the road network - if not well orchestrated – is likely to have an adverse effect on the sustainability of the strategic road network and the smooth functioning of road transport (paragraphs 38, 39, 68).
- To ensure sustainable financing of road maintenance, it is critical to implement reforms in the road user charging system (paragraphs 22, 41, 62).
- Bridge opening delays have a major effect on users by creating prolonged traffic bottlenecks at key locations. The economic analysis done at appraisal should explicitly consider the costs of delayed bridge construction in its risk assessment. The appraisal should also consider the potential for bridge construction delays in its treatment of risk mitigation and should include alternative designs (paragraph 14).

**IMPLEMENTATION COMPLETION REPORT**

**SRI LANKA**

**THIRD ROADS PROJECT**

**CREDIT 2183 - CE**

**PART I - PROJECT IMPLEMENTATION ASSESSMENT**

**SRI LANKA**  
**THIRD ROADS PROJECT**  
(CREDIT 2183 – CE)

**PART 1: PROJECT IMPLEMENTATION ASSESSMENT**

**A - Background**

1. GOSL's development strategy has focused on export-oriented and private-sector led growth, without sacrificing the environment or quality of life. The country's growth strategies have also sought to ensure that the poor are included by providing access to services and employment. The transport sector has traditionally had a critical role to play in achieving these goals, especially the road system, which is the main artery of the island's economy.
2. The country has an extensive and well-developed road network which evolved during the last century to serve the island's plantations. Almost every part of the country is accessible by a road system of 97,000 km. The national trunk road system (Class A and B roads), under the responsibility of RDA, consists of 11,000 km of paved roads (11% of the total). Provincial Councils account for another 15,300 km (16%), while local governments and specialized agencies account for the remaining 71,000 km (73%). A road condition survey carried out in 1996 indicates only 10% of the national trunk roads had a roughness of less than 5,000 mm/km (i.e. fair quality). This compares to 51% in a similar survey carried out in 1986, indicating a substantial decline in quality over this period. The road sector is by far the country's most important mode of transport and accounts for over 95% of annual passenger km and for 95% of freight tonne-km.
3. The road sector faces significant problems. Although the network covers the country, it is in a state of serious disrepair. Historically, inadequate maintenance expenditures have been made worse in the face of high population growth, rapid urbanization and slow economic development. The short-term concern is to reduce the maintenance backlog by increasing the recurrent maintenance allocations, improving expenditure efficiency, reducing project completion time, and increasingly outsourcing road maintenance to contractors.
4. Development of an efficient transport sector has long been a GOSL objective, which IDA has encouraged. IDA has had five operations in the road sector. The first credit for a highway project was approved by IDA in 1968, but was cancelled, as GOSL wanted to change the project approach and scope. The next lending operation was in 1979, when IDA approved the first Road Maintenance Project (Credit 900-CE), which became the turning point in IDA's dialogue with GOSL on highways. In March 1980, IDA approved the Road Passenger Transport Project (Credit 994-CE).
5. The Second Roads Project (Loan 2517-CE, approved April 1985) built on the work of the earlier two projects. Its objectives were to lower vehicle operating costs through a targeted investment program for priority road sections and selected bridges. The loan also envisioned strengthening the transport infrastructure institutions in the areas of transport planning, coordination and road maintenance. The Emergency Reconstruction and Rehabilitation Project (Credit 1883-CE, approved March 1988) financed road reconstruction in selected areas of the north and northeast, which had been damaged during the country's civil unrest. To follow up on the Second Roads Project, the general purpose of the Third Roads Project was to assist in rehabilitating and upgrading road infrastructure, promote better and more sustainable road maintenance, and reduce the high operating costs of selected road segments.

6. The on-going Colombo Urban Transport Project (CUTP) (Credit 2495-CE, approved May 1993) has three components: (a) an Immediate Action Plan including, a transport system management program and selected road improvements, (b) a long-term Urban Transport Planning component, and (c) an institutional strengthening component, which provides consultancy services in transport regulation, technical assistance to initiate a process of reform in Sri Lanka Railways, and an Air Quality Monitoring and Management Study.

7. During the implementation period of the Third Roads Project Sri Lanka: (a) continued to suffer a major military conflict against secessionist rebels, (b) implemented a partial decentralization program, and (c) underwent a change of government in which the party that had governed for 17 years was replaced by the opposition.

### **B - Project Objectives**

8. The specific project objectives were to: (a) reduce road transport cost and delays for passengers and goods by restoring major trunk roads to better operational condition, (b) help restore priority road infrastructure damaged by flooding and landslides in May/June 1989, (c) introduce institutional improvements in the planning, design, programming and implementation of works, and the administration and maintenance of the road system, and upgrade technical standards and introduce efficient use of available materials to achieve greater cost-effectiveness, and (d) upgrade RDA's capacity to supervise and execute rehabilitation works and to identify actions needed to develop the local road contracting industry.

9. The project was to be implemented over an eight-year period and was to focus on: (a) rehabilitation of about 417 km of primary and secondary trunk routes (Class A and B roads), (b) repair, rehabilitation and replacement of 24 bridges, (c) repair and rehabilitation of road sections and associated structures damaged as a consequence of floods and landslides, (d) procurement of vehicles, equipment and supplies to strengthen contract administration and management, and (e) consultant services, technical assistance, and on-the-job training to improve contract monitoring and cost control capabilities. The consultancy services/technical assistance component included: project design, project supervision, and three studies on: (i) the local road contracting industry, (ii) construction materials and design standards, and (iii) road user charges.

10. The location of the road sections proposed for rehabilitation and of the bridges proposed for repair and reconstruction, were selected from a larger program proposed by RDA based on criteria of obvious risk of failure, filling network gaps, and traffic volumes (paragraph 43). At the time of appraisal there was no national road plan or priority investment. The overall scope of the project was limited by scarcity of resources and by the implementing institution's absorptive capacity.

11. The transport savings made possible by the project were expected to be passed on to the users in the form of lower operating costs and increased product availability. The project's benefits were expected to be widely distributed among all segments of the population. The flood rehabilitation component was expected to directly assist rural low income families by restoring access for agricultural inputs/outputs. The project would support private sector involvement in the road sector through assistance to the local contracting industry and it was expected to generate labor-intensive employment opportunities for residents in the vicinity of project works.

12. The objectives were straightforward, in line with the country needs, and supported IDA strategy in the highway subsector. They were appropriate in the context of the situation in the highway sector when the project was formulated. The project's components were directly linked to its objectives.

13. A predominant risk was the possible breakdown of the fragile political stability in the country, which could have affected implementation and costs. Flexibility was incorporated into the implementation schedule to allow for the initial contracts to be in areas unaffected by political unrest. Works were to be initially awarded at annual intervals in order to monitor the situation and enable the timing of the later contracts to be adjusted to prevailing conditions. Other risks identified were the possible weakening of GOSL's commitment to the project and over-extension of RDA's implementation capacity.

### C - Achievement of Objectives

14. The objectives to reduce road transport costs and delays, and to help restore road infrastructure damaged by flooding were met by the physical achievements of the project. The main physical objectives were substantially met after some delays. Of the 417 km initially appraised, 387 km were contracted, and 310 km of roads were completed. Of this 310 km, 92 km were completed with funding from EDCF. From a total of 19 bridges, 13 were completed. RDA is currently completing outstanding works using its own resources. The greatest negative impacts are the lingering bottlenecks that will persist until the bridge works are completed. The ERRs expected by the road investments were achieved. The detailed status of the project road and bridge components as of March 31, 1999 is shown as an attachment to the Supervision/Completion Mission's Aide Memoire (Annex A).

15. Road Contracts. Five contracts for roads covering 298 km have been completed. An additional 12 km has been completed on contract WB3/3 (out of a total length of 88 km). This contract had major problems and was not completed even with the extended Credit closing date of December 31, 1998. Bridge Contracts. Five contracts (comprising 13 bridges) out of a total eight contracts (comprising total 19 bridges) are complete. The balance of work remaining after the original and the extended credit closing dates is expected to be completed by RDA from its own resources. RDA advised IDA that it is going to recover the damages and losses to GOSL caused by contractor delays by enforcing appropriate measures in the conditions of contract.

16. Institutional change in RDA is taking place within a context of trends affecting the road sector in all countries. These global trends include:

- Growing service demands leading to accelerated deterioration of an aging infrastructure,
- Overall budget tightening, cost-cutting and calls for staff reductions,
- Institutional focus on users as the customers,
- Increasing concern with environmental and safety issues.

17. In Sri Lanka, RDA currently remains largely in a traditional public agency orientation. The regulatory environment is complicated by a multitude of processes and units. The organizational structure includes a large overall size with many operations performed by their own work force ("force account") or through other government agencies. The organization tends to focus on technical and functional areas and is still lacking a long-term strategy. There is little use of integrated modern computer systems and information processing concepts. Financing is provided through government funding, and limited attention is paid to environmental and social safeguards.

18. In the context of current global trends and RDA's current institutional capacity, the project had specific institutional development objectives including:

- introduce institutional improvements in the planning, design, programming and implementation of works, and the administration and maintenance of the road system,
- upgrade technical standards and introduce efficient use of available materials to achieve greater cost-effectiveness,

- upgrade RDA's capacity to supervise and execute rehabilitation works,
- identify actions needed to develop the local road contracting industry.

19. Even though these institutional development objectives were limited, the project only partially achieved these objectives, including:

- strengthened administration of projects,
- improved understanding of road users, improved understanding of and support for the local construction industry, and improved design standards and construction methods,
- support of the local consulting and contracting industries through their direct involvement in the project.
- improvement of the technical skills of some of RDA engineers' through secondment to supervision consultants,

20. RDA's project management and administrative capability was substantially improved under the project through the establishment and organization of PMMU in RDA. Senior road and bridge engineers were assigned to PMMU, and the relevant expertise was provided to develop and operate the systems and procedures needed. Computerized programs for monitoring and reporting on the financial and physical progress of the project's road and bridge components were set up and RDA staff trained in their use. In addition, PMMU satisfactorily prepared the many road and bridge contract documents and managed the bid evaluation process. It had a temporary lapse following the departure of the expatriate expert, but additional training was given to RDA staff, and its operations were revived. PMMU has been successfully operating with only RDA staff since April 1997. RDA has expanded the work of PMMU to include managing and administering all foreign-aided development projects in the highway subsector.

21. The project's Technical Assistance component focused on three areas of institutional improvement: road user charges, design, and construction and maintenance. The results of these efforts are discussed below.

22. A Road User Charges Study was satisfactorily completed by Transport Studies and Planning Centre (TSPC), assisted by a consulting transport economist, in October 1992. A draft final report was published in January 1993. The objective of the study was to investigate the benefits received by, and charges currently levied upon, the different types of road user. The study recommended increases in user fees for two types of user, and because of their macro-economic implications, the study recommendations were referred to MOF/Planning. The findings and recommendations of the study were discussed at a Workshop on Transport Sector Policy organized in Colombo by GOSL and IDA in July 1996. However, the implementation of the recommendations has not taken place, and the matter still rests with MOF.

23. A domestic Construction Industry Study was satisfactorily completed by Institute of Contractor Training (ICTAD) in September 1992. The Study findings highlighted the difficulties of contracting in Sri Lanka and contained recommendations to resolve these difficulties. The findings were endorsed by the GOSL and implemented by RDA and by ICTAD with the assistance of the Contractors' Association. The local civil engineering and construction industry has benefited as a result (paragraph 26). Recently, the Contractors Association has achieved recognition of construction work as an industry in its right. GOSL just passed a Construction Industry Act to give construction, as an industry, the same access to the same development incentives as other industrial sectors.

24. A Materials, Highway and Bridge Design Study was carried out by RDA in-house with the assistance of experts on highway alignment and pavement design, and an expert on bridge design provided through international consultants. The study with the international consultants was

completed in August 1996. RDA is now using the findings and recommendations in its work. Among the study's recommendations were to: (a) relate designs more closely to the availability and use of local materials, (b) upgrade and enhance the skills of the local consultants in highway engineering as well as improve RDA's engineers capability in reviewing designs, and (c) upgrade and modernize the RDA bridge design methodology. To achieve this the consultants prepared manuals for highway geometric and pavement design and for bridge design. This material was circulated for discussion and further adapted to Sri Lankan requirements.

25. The following documents have since been issued by RDA to strengthen design and supervision:

- Structural Design of Roads Under Sri Lankan Conditions (Geometric Design Standard of Roads),
- Manual and Unified Set of Standards for Road Construction, Rehabilitation, and Maintenance,
- Bridge Design Manual,
- Bridge Construction Manual,
- Bridge Maintenance Manual,
- Inventory of Road Construction Materials,
- Amendments to Standard Specifications for Road Construction and Maintenance for Roads and Bridges (1989) - Pavement Section

26. The development of the local contracting industry (for construction activities only) started under IDA's Second Roads Project and received a major boost under the Third Roads Project. Following the successful completion of a study on the construction industry done by ICTAD, agreement was reached among RDA, ICTAD and IDA on the participation of local contractors, appropriately prequalified according to their capacity and competence, in the road and bridge rehabilitation program. Most of these contractors satisfactorily completed their works and gained considerable experience for future contracting work. Two local design consultants, one local supervision consultant, and five local contractors were involved in implementing the project. Local firms accounted for 35% of IDA disbursements on construction.

27. A small number of local contractors failed to complete their contracts, and RDA made arrangements with the Contractors' Association, with IDA approval, to complete the contracts. The main cause of local contractor failure was the lack of adequate working capital resulting from inexperience in financial management. This appeared to be particularly the case with the use/misuse of the contract mobilization advance. This problem should be addressed in future contracts by better prequalification and perhaps by more flexible disbursement mechanisms. Overall partial results were achieved in private sector development.

28. Several institutional practices in RDA need further strengthening and were only partly addressed by this project. Examples include:

- Competitive tendering of construction and maintenance (for works funded by IDA only),
- Increased use of information technology (is now starting),
- Creation of owner/provider model (i.e. road agency, not yet applied),
- Innovative financing arrangements (not yet applied),
- Certification program for contractors(not yet applied),
- Performance management and measurement framework (not applied during project), and
- Need to incorporate social assessment and resettlement safeguards into project design and implementation. (For example, greater attention and specific guidelines developed by the Borrower and IDA during and after project approval).

29. In a broader institutional context, more attention will need to be given in future road sector projects to:

- Regulatory context - RDA needs to become more aware of external stakeholders, their interests, and valued responses,
- Structural Characteristics – improving service delivery effectiveness requires streamlining certain processes and carrying out maintenance through contractors. Restructuring will require a high level of political support and strong external support (ADB, IDA, OECF),
- Processes – technical assistance for process reengineering is required to assist in building organizational capability through joint client-consultant teams,
- Systems –there is a need to integrate information technology awareness and its significance into all aspects of change management work (not only to discrete units), and
- Financing mechanisms – road sector financing requires initiatives that provide additionality to Central Government funding. Benchmarking study tours could be sponsored to instruct and reorient leaders and financial personnel to more commercial practices and the culture of private investment.

### **D - Major Factors Affecting the Project**

30. **Timeliness of decision making.** The slow and lengthy GOSL clearance procedures for standard contract documentation, tender evaluation, and contract award caused major delays in project implementation. Delays of 8 to 12 months in civil works procurement were not uncommon. These delays increased costs by triggering contract price escalation clauses. There were also considerable delays in obtaining the necessary quarrying licenses despite the active support of RDA.

31. **Inexperienced local contractors.** Mobilization by some local contractors was slowed by their inadequate financial management and experience. Advance payments were not always managed well, leading to cash flow problems in the early stages of the contract. Poor performance of some local contractors was encountered. Some contractors alleged failure to find local materials expected in the vicinity of the project sites, which indicates poor pre-construction surveys and experience.

32. **Inexperienced international contractor.** One contractor and one contract represented the bulk of the substantive implementation problems in this project. This may have been exacerbated by the contractor's relative inexperience in road construction in contrast to other types of civil engineering. Weak prequalification screening may also have contributed to this situation.

### **E - Project Sustainability**

33. **Sustainability.** The project's sustainability is rated uncertain. A positive development is GOSL's recognition that the benefits of improved maintenance of existing roads should make it a spending priority. GOSL contributions to RDA have increased from 3.2% of the Public Investment Programme (PIP) over the 1985-89 period (or 33% of all contributions to transport) to 10.8% of the PIP over the 1995-98 period (or 49% of all contributions to transport). The Sri Lanka Transport Sector Strategy Study (TSSS, Report No. 16269-CE, page 21) published in January 1997 estimates (based on existing conditions and unit costs) that this trend will continue, with highways rising to 65% of all contributions to transport beyond the year 2000. While these macro-level allocations do not break out the proportion spent on maintenance, the RDA budget (next paragraph) provides this. RDA's budget is supplied from GOSL general revenue.

34. Also on the positive side, RDA's commitment of resources for maintenance has improved during the course of the project. There has been a trend to higher expenditures on maintenance in real terms. Table 1 (below) summarizes the RDA's maintenance budget and expenditure.

Time period	Budget amount	Actual amount spent	Actual as % of budget	Actual in constant (1990) value	Km of roads under RDA	Actual (constant)/km, (Rs thousands)
1985-1989	309.3	213.3	69.0 %	273.0	25,600	10.7
1990-1994	545.5	543.2	99.6 %	446.9	10,400	42.8
1995-1998	1068.7	946.6	88.6%	521.8	11,133	46.9
1999-2004	1416.2	...	...	588.7 (budgeted)	11,152	52.8

Sources: SAR, RDA (Annex B, routine plus periodic maintenance).

35. On the other hand, it is still not clear if the increases in spending are sufficient to guarantee sustainability of the strategic road system. Until 1990, RDA was responsible for 25,600 km of roads. Since 1990, with the devolution of 15,300 km of roads to Provincial Councils (C, D, & E roads) and other minor adjustments, RDA has been responsible for approximately 11,100 km of roads.

36. Recent information for RDA shows that during the 1995 to 1998 period, expenditures for maintenance were Rs 946.6 million per year (Rs 521.8 million constant 1990 value). The budgeted amounts for 1999 to 2004 are approximately Rs 1,416.2 million per year (Rs 588.7 million constant 1990 value).

37. The predominant form of periodic maintenance used by RDA is sand sealing, a surface treatment with an effective life of about two years. In the early 1990s, RDA completed roughly 1,700 km of sand sealing per year. During the 1996 to 1998 period, RDA provided about 2,500 km of sand sealing each year, although the annual figure varies. This represents about 23% of the network each year. With its effective life of about two years, this effort is sufficient to minimally maintain about 46% (23% x 2 years) of the total A and B roads network or, alternatively, to maintain the network with resealing, on average, every 4.3 years. Detailed information on the location of roads receiving sand sealing compared to their traffic volumes is not available. The Borrower's contribution to the ICR (Annex B) includes a summary of their Operational Plan for the immediate future. Details on the conditions of the road network are shown in Annex C.

38. There is further evidence of GOSL attention to the importance of maintenance in the highway subsector, through its increasing transfer of funds for maintenance of Provincial Council roads. This is a relatively new level of government, established in 1989. Since then the Provincial Councils are responsible for 15,300 km of Class C, D, and E roads. Through the Ministry of Transport and Highways (MTH), GOSL was transferring approximately Rs 90 million per year to the Provincial Councils prior to 1996. Since then the transfers have increased substantially: Rs 800 million in 1996 and 1997 and Rs 1,000 million in 1998 and 1999. The budget is Rs 1,500 million in 2000. The transfer mechanism is also evolving. As the Councils have developed administrative experience, they have taken on more direct responsibilities. Beginning in 2000, the Treasury will make the transfers directly to the Provincial Councils. There is no data available yet

to determine the effectiveness of these increased expenditures. Performance of the Provincial authorities in maintaining the secondary road network under their responsibility is critical to ensure sustainability of the road network.

39. MTH will continue to support to Provincial Councils through setting standards, regulating, training, technical assistance, and preparing District Plans (25 in total, with a 10 year planning horizon). A Road Sector Master Plan will be available in 2000 to guide priorities for the country as a whole. The design manuals and standards prepared through this project are being disseminated to all Provincial Councils and local municipalities to supply road and bridge standards.

40. RDA has improved its ability to undertake and manage construction and maintenance contracts with the formation of PMMU. The local contracting industry has increased its experience and skill in performing maintenance work. Both of these developments will contribute to better sustainability of the road sector. However long term sustainability will also depend on having an adequate stream of on-going construction contracting, to provide the newly created industry with a steady supply of work.

41. A project covenant not complied with was the implementation of recommendations from the Roads User Charges Study that taxes on diesel fuel be increased (raising the retail price, in 1992 figures, from Rs 11.55/l to Rs 14.10/l, to be equivalent to petrol (gasoline). This represents an increase of 22%) and that annual registration fees for heavy trucks be increased (times three, to Rs 12,000). These recommendations have been under consideration by the GOSL since the report was completed in 1993. Because of their macroeconomic implications, the study recommendations were referred to MOF/Planning, but implementation of the recommendations has not taken place, and the matter still rests with MOF. During supervision, the lack of compliance with the project covenants was pointed out.

### **F - IDA Performance**

42. **Project Identification.** Project identification was satisfactory. This project was a continuation of earlier road development projects supported by IDA. The first road project was prepared by IDA staff, based on the country's list of road priority projects. Identification for the Second Roads Project was more detailed. It involved a preparation process whereby less than half of the detailed selection work was done by local consultants and the balance by international consultants. In the Third Roads Project about two-thirds of the identification effort was done by local consultants with only one-third being done by international firms. Realignment of road sections, or junctions, was not considered in project design. This was because (a) both IDA and Borrower sides felt that requirements for land acquisition would significantly delay implementation, and (b) delays in implementation would postpone - and thus lower - the benefits expected from the project. IDA's policy and guidelines on resettlement planning now require that a detailed social assessment of road rehabilitation and construction projects be conducted during project preparation. More attention to realignment and road junctions should be given during design of future road projects.

43. The selection of road segments for analysis and incorporation into the project was based on: (a) risk of physical failure, (b) completing gaps remaining in the priority road network from earlier investment programs, especially around Colombo, (c) expected areas of urban development around Colombo, and (d) longer distance access in the fast growing region south of Colombo. This explains the apparently "patchy" selection of roads around Colombo and the different set of inter-city roads selected to the south.

44. **Preparation Assistance.** Preparation assistance was satisfactory. Part of the effort to develop capacity in the highway sector has been to encourage an understanding of the value of maintaining existing roads rather than simply building new ones. This includes not diverting maintenance funds into reconstruction or new roads spending.
45. After the first and second roads projects, more attention was paid to the sector environment and the implementation details in this project. During project preparation an effort was made to make better use of local consultants, backed up by international consultants, to establish the details of the investments required. In this project considerable effort was placed on clearly defining and describing the types of investment including road segments or bridges to be upgraded and presenting the analysis in detail in the appraisal report. Performance indicators were not included to monitor and evaluate the project during implementation.
46. **Appraisal.** The appraisal work was satisfactory. The Staff Appraisal Report (SAR) clearly documents the full details of the investment program and its analysis. At appraisal the final engineering designs were complete for about 200 km of roads and six bridges, nearly half of the project roads, which allowed a fast start on implementation.
47. The technical review of the project was detailed and robust. Cost estimates and economic analysis were completed for 25 road segments and 26 bridges. Traffic volume data provided by RDA were selectively cross-checked using field surveys conducted by Moratuwa University. The economic evaluation included a switch value analysis demonstrating that a cost increase of 418% or a benefits reduction of 81% would be needed to drive the project to a zero net present value.
48. The SAR shows an understanding of the limits of the Borrower's procedures and provides remedies for this by setting up PMMU, the appointment of supervision consultants, the requirements for monitoring and an annual action plan showing adequate resources committed from GOSL. The possibility for delays was built into the original timetable by following the standard disbursement profile for this sector.
49. **Supervision.** With a total of 17 supervision missions over the lengthy 8-year project implementation period - or slightly over 2 missions each year - IDA supervision and progress reporting were satisfactory, and the performance ratings were appropriate. Performance indicators, however, were not retrofitted during project implementation. The slow progress in contract execution and cost control were the main concerns of IDA's supervision missions. The contract execution delays resulted mainly from the unsatisfactory performance of one of the two expatriate contractors and from the inexperience of some of the local contractors, which was expected given the nature of this component. The individual contract and component costs and the aggregated project cost and related disbursement percentage were closely monitored during supervision with PMMU.
50. There was considerable disappointment with the performance of an international contractor on Contract WB3/3 (Galle – Matara), and an inordinate amount of IDA supervision time was spent on this contract. The contractor failed to fulfill his contractual obligations and effectively abandoned the works, having completed only 12 km out of 88 km. The contractor had been prequalified by RDA as fully compliant. The bid came in much lower in price than that given in the Engineer's estimate and was the lowest bid received. The Tender Board, because of this low bid price, then recommended against awarding the contract to this contractor. However, IDA insisted on following the Procurement Guidelines (i.e., must accept the lowest responsive bid) and on having the contract awarded, albeit with an increased Performance Guarantee and a Detailed Implementation Program to be closely monitored. Once awarded, it became difficult for RDA to remedy the situation despite almost continuous urging by IDA supervision missions for

appropriate actions as allowed under the conditions of contract. The Borrower perceives IDA to be non-responsive on procurement decisions.

51. IDA's prompt and flexible responses to proposals dealing with the many problems experienced with the local contractors and to other project related matters concerning increased costs and revisions to disbursement percentages were a commendable feature of IDA's supervision performance (paragraphs 27, 60).

52. Apart from monitoring and reporting on the physical and financial progress of the project and ensuring that the suitable quality controls were in place, the supervision missions concentrated on the following important project matters:

- institutional development of RDA's project management and administration,
- project cost controls,
- development of local contracting industry, and
- studies on Road User Charges, Domestic Contracting Industry and Road Materials, Design and Construction Standards.

53. The extension of the credit closing date from June 30, 1998 to December 31, 1998 was undertaken at the request of GOSL and in the expectation that with this extension road contract WB3/3 and bridge contract WB3/29 could be completed. Despite the extension neither of these two contracts were completed.

### **G - Borrower Performance**

54. **Project Identification and Preparation.** Overall, the Borrower's project identification and preparation activities were satisfactory. The Borrower faced some difficulties in project identification and preparation because basic planning information was lacking, e.g., out-of-date or non-existent topographic surveys and pavement conditions data for some road segments. Another difficulty in project preparation was the specifications required by RDA for bridge design. RDA uses designs which are both material and labor intensive, and which result in slow construction. Requiring the use of these designs raised expected costs and reduced the amount of work planned. Adopting the Bridge Design Manual, prepared as part of this project, should improve future project preparation.

55. **Implementation.** The Borrower's performance in implementing the project was generally satisfactory. Following the system set up under the IDA-supported Second Roads Project, RDA managed the project through a Contract Construction Division. The Division was headed by a Director with Deputy Directors responsible for road and bridge contracts on a district basis. The Division was effectively supported by PMMU.

56. Lengthy GOSL bid document approval and tender evaluation procedures (sometime taking up to 8 - 12 months) were the main causes of delays in project implementation. These procedures were discussed by IDA missions at all GOSL levels involved, and although the financial thresholds were raised to allow clearances by various departments and ministries, the procedures are still inordinately lengthy. This problem needs to be resolved by senior IDA staff with high level GOSL officials.

57. Expatriate consultants in joint venture with a local consultant assisted RDA in reviewing and revising designs done largely by local consultants and in the supervision of road works. Their performance on supervision was less than satisfactory on occasion and RDA had to request the removal and replacement of the engineer's representative because of his failure to apply strictly the specifications on drainage in one instance, and a seeming reluctance to recommend appropriate

contractual action against the poorly performing expatriate contractor. The replacement engineer's representative performed satisfactorily.

58. Local consultants were involved in the design of road works and performed satisfactorily. However, there was the problem of lack of responsibility between the design reviewer and the original designers in cases where errors of center-line location and resulting construction quantities occurred.

59. The bridge structure designs were done by RDA's Bridge Division. The designs were archaic and not cost effective. The Bridge Design Manual will help RDA upgrade and modernize its bridge designs. RDA has adopted the new Bridge Design Manual standards and is using them in other donor agency development projects as well.

60. In recognition of RDA's initially limited capacity to manage projects the project schedule allowed for a gradual start up with only one contract being tendered at a time. Much higher than expected cost estimates, which came in with the initial rounds of bids, delayed awarding the contracts while cost reduction approaches were examined, including alternative designs and split contracts. This need for redesign along with the limited capacity of local design contractors slowed the design work. The need for contract document re-drafting and re-approval also delayed letting contracts.

61. Despite the difficulties involved in managing inexperienced contractors and a reluctance to take appropriate contractual action against poorly performing contractors, RDA implemented the project satisfactorily and is to be commended for their flexible solutions in dealing with contractors' cash flow, equipment and materials problems (paragraph 27).

62. **Project Covenants.** Overall the project covenants compliance is rated satisfactory. The project covenants were complied with except for adopting the recommendations of the Road User Charges Study. As described in the sustainability section above, the study recommended a slight increase in the retail price of diesel fuel and a substantial increase in the annual license fee for heavy trucks. These recommendations have not been adopted. The recommendations were made to more carefully match the contribution of the road system users to the maintenance costs they create. GOSL's lack of acceptance of the recommendations, which has left in place inappropriate price signals, is a significant barrier to efficient evolution of the transport system. This issue is critical for sustainability of maintenance, indicating that future involvement in the sector should pay close attention to implementation of the study's recommendation.

63. **Operation.** The Borrower's actions have been satisfactory. PMMU is an on-going operational aspect of this project. Setting it up was a condition of the Credit (Schedule 4-1). PMMU was operational with an expatriate Advisor by the time of the first supervision mission (March 1991). Despite a change in the Advisor after one year due to health reasons, and a period of staff turnover (April 1995 to May 1997) when no senior RDA staff were committed to PMMU, RDA has since supported it with adequate staffing, resources and attention. Its work has been expanded to manage and administer all foreign-aided development projects in the highway subsector. In its present form, PMMU is sustainable. Future work in this area would be to build on the initial success and to improve the supervision ability for more difficult contracts.

## H - Assessment of Outcome

64. **Overall Outcome.** The overall outcome of the project was satisfactory. This rating is based on the satisfactory, if partial, achievement of the physical objectives, the improved institutional capacity of RDA, and the development of the local contracting industry. The project would have been highly satisfactory if better project management for road contract WB3/3 had

resulted in problems being addressed in time to have an alternate contractor complete the proposed works.

65. **Economic Evaluation.** Economic analysis was undertaken to compare estimated ERR (from the SAR) with achieved ERR (based on actual results to date) for the project's roads segments. The SAR showed an overall ERR of 33% for the project, with a range for specific road links from 22% to over 80%. The revised analysis prepared by the Borrower shows an overall ERR of 52%, with rates of return ranging from 21% to 125% for specific road links. Overall traffic volumes on project road segments, at opening, were 14% higher than estimated in the SAR. Details by road link and assumptions used are provided in Annex C.

### **I - Future Operation**

66. In support of IDA's Transport Sector Strategy, future IDA support should address institutional change and policy reform of RDA: (a) from a public oriented to a mixed model agency, (b) to improve the efficiency of management of strategic needs, and (c) to improve human resource development. Institutional strengthening and RDA staff training should be continued, with emphasis on project management, environmental and social assessment, and planning.

67. GOSL needs to substantially increase the budget for roads to implement RDA's ambitious priority investment plan for the next decade. This plan will require substantial resources for development and maintenance. At present, District Plans (including district road master plans) are under development. For any plan to be implemented it will be necessary to (i) increase the efficiency of expenditure, (ii) identify new sources of financing, (iii) attract private investment to complement public sector investment, and (iv) increase attention to sustainable and effective maintenance.

68. With the devolution of 15,300 km of roads to the Provincial level and the gradual emergence of road agencies for these subnational levels of government, there is an opportunity for RDA and external funding agencies to assist the newer agencies in developing their maintenance capability, including identification of sustainable maintenance funding sources.

69. Future investments in the highway subsector of Sri Lanka must balance maintenance with upgrading of strategic roads to provide additional road capacity. Past IDA projects have been concerned mainly with the physical rehabilitation of road pavements only. No realignment improvements or new alignments have been built, and no substantial increase in road capacity has been provided. Resettlement and environmental safeguards should be better incorporated into project design.

70. More cost-effective maintenance practices need to be adopted in view of the huge backlog in periodic maintenance. The lower cost single and double bituminous surface treatments must be considered and the more costly Asphaltic Concrete (AC) surfacings only used when additional pavement structural strength is needed. This would also help the local contractors since it is less equipment intensive.

71. The number of traffic accidents, already very high on some major roads, will increase dramatically. Road safety measures are already urgently needed. An effort should be developed with RDA/GOSL to support a comprehensive, staged, development plan for the expansion of road network capacity and the ancillary works needed to ensure a cost effective and safe road transport system.

72. IDA should assist RDA/GOSL in implementing a bridge replacement and rehabilitation program. This should be based on RDA's bridge condition inventory, which shows that a very high proportion of the existing bridge structures need to be either replaced or rehabilitated.

### **J - Key Lessons Learned**

73. The key lessons learned from the project are as follows:

- Institutional reform is needed to enable RDA to move from a public oriented agency to a mixed agency and should: (a) improve efficiency through outsourcing of maintenance to contractors, (b) incorporate information technology in road management, (c) create an owner/provider model, (d) develop environmental and social safeguards in road development and maintenance, and (e) streamline management and decision-making. External financing agencies will play a major role in supporting RDA in the reform process as part of road sector lending. The availability of large external aided support, with limited conditionality, for new road development is a factor to take into consideration. Any future road sector lending should be preceded by a dialogue on reform with GOSL, RDA, and other major donors (paragraphs 28, 30, 56, 66).
- GOSL should empower the Tender Committee and a revise the clearance procedures for the approval of bid documents to ensure timely contract awards. This could minimize project delays and improve decision-making (paragraphs 30, 56, 60).
- During project design greater attention should be placed on: (a) planning and prioritization of investments, (b) holistic design to address safety issues, environment, and social safeguards, (c) monitoring and evaluation systems including performance indicators, and (d) sustainability, including funding and mechanisms for road safety. Appropriate design and standards, including attention to resettlement, environment, and alignment considerations, are critical to achieve efficient and effective results in construction and maintenance (paragraphs 42, 60, 69, 70, 71).
- Support for local contractors needs to be improved, especially when fostering development of a new set of private sector companies. The lack of adequate working capital resulting from inexperience in financial management delayed several contractors (paragraphs 27, 31). Consideration should be given to a more comprehensive development program for the private construction sector as a whole, including more than simply updating government standards. There is also a need to have an adequate stream of on-going construction contracting, to provide the newly created industry with a steady supply of work (paragraph 40).
- Decentralization of responsibility for the road network - if not well orchestrated – is likely to have an adverse effect on the sustainability of the strategic road network and the smooth functioning of road transport (paragraphs 38, 39, 68).
- To ensure sustainable financing of road maintenance, it is critical to implement reforms in the road user charging system (paragraphs 22, 41, 62).
- Bridge opening delays have a major effect on users by creating prolonged traffic bottlenecks at key locations. The economic analysis done at appraisal should explicitly consider the costs of delayed bridge construction in its risk assessment. The appraisal should also consider the potential for bridge construction delays in its treatment of risk mitigation and should include alternative designs (paragraph 14).

**IMPLEMENTATION COMPLETION REPORT**

**SRI LANKA**

**THIRD ROADS PROJECT**

**CREDIT 2183 - CE**

**PART II – STATISTICAL ANNEX**

TABLE 1: SUMMARY OF ASSESSMENTS

A. <u>Achievement of Objectives</u>	<u>Substantial</u>	<u>Partial</u>	<u>Negligible</u>	<u>Not applicable</u>
Macro Policies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Sector Policies	<input type="checkbox"/>	✓	<input type="checkbox"/>	<input type="checkbox"/>
Financial Objectives	<input type="checkbox"/>	✓	<input type="checkbox"/>	<input type="checkbox"/>
Institutional Development	<input type="checkbox"/>	✓	<input type="checkbox"/>	<input type="checkbox"/>
Physical Objectives	✓	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Poverty Reduction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Gender Issues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Other Social Objectives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Environmental Objectives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
Public Sector Management	<input type="checkbox"/>	✓	<input type="checkbox"/>	<input type="checkbox"/>
Private Sector Development	<input type="checkbox"/>	✓	<input type="checkbox"/>	<input type="checkbox"/>
Other (specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
B. <u>Project Sustainability</u>	<u>Likely</u>		<u>Unlikely</u>	<u>Uncertain</u>
	<input type="checkbox"/>		<input type="checkbox"/>	✓
C. <u>Bank Performance</u>	<u>Highly Satisfactory</u>		<u>Satisfactory</u>	<u>Deficient</u>
Identification	<input type="checkbox"/>		✓	<input type="checkbox"/>
Preparation Assistance	<input type="checkbox"/>		✓	<input type="checkbox"/>
Appraisal	<input type="checkbox"/>		✓	<input type="checkbox"/>
Supervision	<input type="checkbox"/>		✓	<input type="checkbox"/>
D. <u>Borrower Performance</u>		<u>Highly Satisfactory</u>	<u>Satisfactory</u>	<u>Deficient</u>
Preparation		<input type="checkbox"/>	✓	<input type="checkbox"/>
Implementation		<input type="checkbox"/>	✓	<input type="checkbox"/>
Covenant Compliance		<input type="checkbox"/>	✓	<input type="checkbox"/>
Operation (if applicable)		<input type="checkbox"/>	✓	<input type="checkbox"/>
E. <u>Assessment of Outcome</u>	<u>Highly Satisfactory</u>	<u>Satisfactory</u>	<u>Unsatisfactory</u>	<u>Highly unsatisfactory</u>
	<input type="checkbox"/>	✓	<input type="checkbox"/>	<input type="checkbox"/>

**TABLE 2: RELATED BANK LOANS/CREDITS**

Loan/credit title	Purpose	Year of approval	Status
1. Road Maintenance Project (Credit 900-CE)	The basic aim was to facilitate the transport of goods and passengers and to reduce road transport costs. The project was specifically designed to: (a) arrest the deterioration of the road system by a program of enhanced routine and periodic maintenance, and (b) lay the foundation for improved planning of road maintenance and execution of future works	June 1979	complete
2. Road Passenger Transport Project (Credit 994-CE)	The objectives of the project were to: (a) restrain the growth of oil imports, (b) provide a more reliable bus service which would offer the public a more acceptable alternative to the use of private car, and (c) decentralize the control of bus operations to financially viable RTBs.	March 1980	complete
3. Second Roads Project (Loan 2517-CE)	The objectives of the Second Roads Project were to lower vehicle operating costs on Sri Lanka's deteriorated road network through a targeted investment program for priority road sections and selected bridges. The loan also envisioned strengthening the institutions concerned with transport infrastructure in the areas of transport planning and coordination and road maintenance. The project's principal components included improving periodic maintenance of the trunk road network and bridges (about 10,400 km and several hundred structures), and the rehabilitation and/or widening of about 570 kilometers of roads and 28 bridges. It also provided for workshop and laboratory equipment, training in bitumen emulsion technology, equipment fleet management and technical assistance to strengthen contract management and administration	April 1985	complete
4. Emergency Reconstruction and Rehabilitation Project (Credit 1883-CE)	The main objectives of the project were to assist the Government of Sri Lanka: (i) to deliver crucial social needs to refugees returning to the North and East regions of the country, which had been ravaged by civil war, (ii) to rehabilitate and upgrade basic infrastructure damaged in the conflict, and (iii) to reestablish economic activities in these areas. Specific objectives of the project included: (i) clearing of mined residential and agricultural areas, (ii) provision of resettlement grants, (iii) assistance for housing construction and for the recovery of economic activities, and (iv) reconstruction of physical infrastructure.	March 1983	complete
5. Economic Restructuring Credit (Credit 2128-CE)		May 1990	
6. Colombo Urban Transport Project (Credit 2495-CE)	The project has three components: (i) an Immediate Action Plan including, a transport system management (TSM) program, selected road improvements, and consultancy	April 1993	

	<p>services for implementation support, (ii) a long-term Urban Transport Planning component, with consultants to carry out a Colombo Urban Transport Plan, (iii) an Institutional Strengthening component, which provided consultancy services in transport regulation to train the National Transport Commission (NTC) and Provincial Council (PC) staff, technical assistance to initiate a process of reform in Sri Lanka Railways (SLR), and an Air Quality Monitoring and Management Study.</p>	
7. Transport Sector Strategy Study		Published, Mar. 1997

**TABLE 3: PROJECT TIMETABLE**

Steps in Project Cycle	Date Planned	Date Actual/ Latest Estimate
Identification (Executive Project Summary)		January 1989
Preparation		May 1989
Appraisal	April 1990	April 1990
Negotiations	September 1990	September 1990
Board Presentation	November 6, 1990	November 6, 1990
Signing	November 30, 1990	November 30, 1990
Effectiveness	February 21, 1991	February 21, 1991
Midterm review		November 15, 1994
Project Completion		November 29, 1998
Loan Closing	June 30, 1998	December 31, 1998

**TABLE 4: LOAN DISBURSEMENTS: CUMULATIVE ESTIMATED AND ACTUAL**

**(US\$ Million)**

	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Appraisal Estimate	2.4	4.9	9.8	17.2	26.2	34.4	40.4	42.5	42.5
Actual	2.41	4.53	6.25	7.41	11.54	18.61	30.29	36.56	37.77
Actual as % of Estimate	100%	92%	64%	43%	44%	54%	75%	86%	89%
Date of Final Disbursement: June 2, 1999.									

**TABLES 5 AND 6: KEY INDICATORS FOR PROJECT IMPLEMENTATION AND OPERATION**

Key Implementation Indicators	SAR Estimate	Revised (funded)	Actual (IDA + EDCF)
1. Road Rehabilitation Works	417 km	387 km	310 km
2. Bridge Works	24 total	19 total	13 total
- repair, widen, re-deck	13	11	7
- replace, reconstruct	11	8	6

TABLE 7: STUDIES INCLUDED IN PROJECT

Study	Purpose as Defined at Appraisal/Redefined	Status	Impact of Study
1.Road User Charges	This study updates and refines information and analysis of road use costs and revenues contained in the 1988 TSPS. The objective of the study is to determine the extent of present distortions and the reforms needed to correct them.	Completed by TSPC in 1993. Recommended modest increase in diesel price and times 3 increase in heavy vehicle registration	Recommendations under consideration by GOSL
2.Road Contracting Industry. (also referred to as: Construction Industry Study, or as: Domestic Contracting Industry Study)	The study investigates current practices, analyzes constraints the industry is facing, and recommends an action plan of measures for its development by introducing international practices into the industry. The study identifies the changes needed to develop a more efficient operation to permit members of the domestic contracting industry to contribute more to the economic development of the country, and to increase the benefits to Sri Lanka generated by construction projects being prepared or implemented through foreign assistance.	Completed by ICTAD in September 1992.	More local contractors are now participating in the project contracts.
3.Road Materials, Design and Construction Standards. (Construction and Maintenance Standards Study)	This study defines, compares, and recommends improved standards and specifications suitable for locally available materials and techniques. The study provides an inventory of materials that can be economically and efficiently used in road construction and maintenance and develops pavement construction and maintenance techniques that make optimal use of local materials and minimize costs. A unified set of road construction and maintenance standards was prepared.	Completed by RDA and Renardet S.A. Consultants, in August 1996. Recommendations have been incorporated into design manuals.	Results being used by RDA and by other donor agency development projects

TABLE 8A, PART 1 - PROJECT COSTS IN US \$

Item	Appraisal Estimate (US \$ million)			Actual/Latest Estimate (US \$ million)		
	Local Costs	Foreign Costs	Total	Local Costs	Foreign Costs	Total
1.ROADS	18.43	25.45	43.88			
Physical Contingencies	1.40	1.93	3.33			
Price Contingencies	2.51	4.85	7.36			
Sub-Total	22.35	32.23	54.58	17.46	34.96	52.54
2.BRIDGES	2.48	2.48	4.95			
Physical Contingencies	0.34	0.34	0.69			
Price Contingencies	0.16	0.33	0.50			
Sub-Total	2.98	3.15	6.14	1.96	2.22	4.18
3.FLOOD REHAB.	1.68	0.56	2.24			
Physical Contingencies	0.17	0.06	0.22			
Price Contingencies	0.01	0.04	0.06			
Sub-Total	1.86	0.66	2.52	0.17	0.60	0.77
4.EQUIPMENT	0.10	0.10	0.19			
Physical Contingencies	0.01	0.01	0.02			
Price Contingencies	0.00	0.00	0.00			
Sub-Total	0.10	0.11	0.21	0.04	0.07	0.11
5.TECHNICAL ASSIST.						
Project Support	2.30	2.41	4.72			
Physical Contingencies	0.22	0.20	0.42			
Price Contingencies	0.20	0.36	0.55			
Total	2.72	2.97	5.69			
Policy Development	0.16	0.63	0.79			
Physical Contingencies	0.00	0.00	0.00			
Price Contingencies	0.01	0.07	0.08			
Total	0.17	0.70	0.87			
Sub-Total	2.89	3.67	6.57	0.19	5.64	5.82
Total Base Cost	25.15	31.62	56.77			
Total Physical Contingencies	2.14	2.55	4.69			
Total Price Contingencies	2.89	5.66	8.55			
Project Preparation Facility	0.00	0.50	0.50	0.00	0.34	0.34
<b>TOTAL PROJECT COST</b>	<b>30.18</b>	<b>40.33</b>	<b>70.51</b>	<b>19.81</b>	<b>43.83</b>	<b>63.64</b>

Based on SAR, Table 8A, Part 2 (the following table), and an exchange rate of Rs 58.55/1 US\$ (12 month average to November 1997)

TABLE 8A, PART 2 - PROJECT COSTS IN SL RS

Item	Appraisal Estimate (SL Rs million)			Actual/Latest Estimate (SL Rs million)		
	Local Costs	Foreign Costs	Total	Local Costs	Foreign Costs	Total
1.ROADS	737.2	1018.1	1755.4			
Physical Contingencies	56.0	77.4	133.4			
Price Contingencies	261.9	428.1	690.0			
Sub-Total	1055.1	1523.5	2578.7	1022.0	2047.0	3069.0
2.BRIDGES	99.1	99.1	198.2			
Physical Contingencies	13.7	13.7	27.4			
Price Contingencies	26.2	34.2	60.4			
Sub-Total	139.0	147.0	286.0	115.0	130.0	245.0
3.FLOOD REHAB.	67.2	22.4	89.6			
Physical Contingencies	6.7	2.2	9.0			
Price Contingencies	11.3	5.6	16.8			
Sub-Total	85.2	30.2	115.4	10.0	35.0	45.0
4.EQUIPMENT	3.8	3.8	7.6			
Physical Contingencies	0.4	0.4	0.8			
Price Contingencies	0.3	0.7	1.0			
Sub-Total	4.5	4.9	9.4	2.26	4.20	6.46
5.TECHNICAL ASSIST.						
Project Support	92.3	96.4	188.7			
Physical Contingencies	8.9	8.1	17.0			
Price Contingencies	26.2	34.3	60.5			
Total	127.4	138.8	266.2			
Policy Development	6.3	25.2	31.5			
Physical Contingencies	0.0	0.0	0.0			
Price Contingencies	1.4	7.3	8.7			
Total	7.7	32.5	40.2			
Sub-Total	135.1	171.3	306.4	10.9	330.0	340.9
Total Base Cost	1005.9	1265.0	2270.9			
Total Physical Contingencies	85.7	101.8	187.5			
Total Price Contingencies	327.3	510.1	837.4			
Project Preparation Facility	0.0	20.0	20.0	0.0	20.0	20.0
<b>TOTAL PROJECT COST</b>	<b>1418.9</b>	<b>1896.9</b>	<b>3315.8</b>	<b>1160.16</b>	<b>2566.2</b>	<b>3726.36</b>

Based on SAR and input from the Borrower (Annex B, page 10, Project Costs)

**TABLE 8B: PROJECT FINANCING**

Source	Appraisal Estimate (US\$ million)			Actual/Latest Estimate (US\$ million)		
	Local Costs	Foreign Costs	Total	Local Costs	Foreign Costs	Total
IBRD/IDA	12.4	30.1	42.5	6.94	30.84	37.77
EDCF	4.3	10.2	14.5	4.12	12.99	17.11
Domestic Contribution	13.5	0.0	13.5	8.76	0.00	8.76
<b>TOTAL</b>	<b>30.2</b>	<b>40.3</b>	<b>70.5</b>	<b>19.81</b>	<b>43.83</b>	<b>63.64</b>

**TABLE 9: ECONOMIC COSTS AND BENEFITS**

A revised ERR has been calculated for the road investments. The SAR showed an overall ERR of 33% for the project, with a range for specific road links from 22% to over 80%. The Borrower has prepared a recalculation of the project's economic costs and benefits. This shows the overall rate of return has been recalculated as 52% with rates of return ranging from 21% to 125% for specific road links. The table below summarizes the results by road link. The complete results are provided in Annex C.

## ERR SUMMARY BY ROAD LINK

SAR Proj No.	RDA Proj No.	Road Link	SAR		Contract		SAR data				Revised Analysis		Opening Year AADT compared to				Length (km)	Cost of Completion (Rs.000's)	Cost per km (Rs.000's)		
			ID #	km	pkg #	km	Base data		Future estimate		RDA, May 1999 AADT	ERR	SAR Base		SAR Estimate						
							original	complete	AADT (Dec 89)	rough (mm/km)			AADT (end open yr)	ERR	abs chg	% chg				abs chg	% chg
GROUP 1 (designed before start of project)																					
1.1 A. C. OVERLAYS (AC)																					
I-1 AC		Moratuwa - Kalutara	1	28.0	3/1			7,303	4,000	9,241	48.8%	not included									
I-2 AC	I-1 AC	Kalutara - Ambalangoda (km 46-85)	2	40.0	3/1	92.0	100%	92.0	2,678	3,900	3,197	20.5%	not included		92.00						
I-3 AC	I-2 AC	Ambalangoda - Galle (km 86-119)	3	33.0	3/1			3,644	3,700	4,471	23.5%	not included									
1.2 REGULATING COURSE (RC)																					
I-4 RC	I-3 RCAC	Katunayake - Veyangoda - Nittambuwa	4	26.0	3/2			2,299	5,200	2,908	34.4%	3,080	61.0%	781	34.0%	172	5.9%	24.34	138,324.8	5,683.0	
I-5 RC	I-4 RCAC	Toppu - Dankotuwa - Giriulla	5	32.0	3/2	76.1	99%	75.3	1,966	5,000	2,487	36.5%	2,635	38.3%	669	34.0%	148	6.0%	31.92	201,199.2	6,303.2
I-6 RC	I-5 RCAC	Biyaniwila - Ganemulla	6	8.6	3/2			1,609	5,500	2,036	39.2%	6,964	40.1%	5,355	332.8%	4,928	242.0%	4.58	44,905.0	9,804.6	
I-7 RC	I-6 RCAC	Seeduwa - Udugampola	7	12.0	3/2			1,064	5,250	1,346	28.8%	1,426	44.8%	362	34.0%	80	5.9%	8.76	34,528.3	3,941.6	
I-8 RC		Matara - Hakmana	8	24.0	3/3			2,374	5,400	3,007	38.2%	requested									
GROUP 2 (designed after start of project)																					
2.1 A. C. OVERLAYS (AC)																					
II-1 AC		Galle - Matara	9	44.0	3/3	88.0	14%	12.3	1,906	4,500	2,415	21.2%	requested								
II-2 AC	II-1 AC	Kaduwela - Hanwella	10	12.5	3/5B			2,782	5,830	3,662	33.7%	4,295	20.9%	1,513	54.4%	633	17.3%	14.20	134,421.3	9,466.3	
II-3 AC	II-2 AC	Peliyagoda - Kadawatha	11	8.0	3/5A			22,861	4,000	30,083	65.9%	32,168	65.9%	9,307	40.7%	2,085	6.9%	8.04	152,713.2	18,994.2	
II-4 AC	II-3 AC	Dehiwela - Maharagama (B)	12	7.6	3/5B			3,662	5,800	4,819	36.0%	5,154	55.7%	1,492	40.7%	335	7.0%	7.53	64,792.2	8,604.5	
II-5 AC	II-4 AC	St. Joseph Street (B)	13	2.8	3/2			7,138	6,300	9,031	98.1%	9,566	124.5%	2,428	34.0%	535	5.9%	2.64	15,988.7	6,056.3	
II-6 AC	II-5 AC	Navinna - Mirihana Road	14	3.4	3/5B			2,896	6,300	3,811	30.9%	4,074	29.0%	1,178	40.7%	263	6.9%	3.39	45,437.1	13,403.3	
II-7 AC	II-6 AC	Hunupitiya-Wattala-Hendala (B)	15	4.0	3/5A			3,570	5,350	4,698	33.5%	5,023	37.7%	1,453	40.7%	325	6.9%	3.60	39,816.7	11,060.2	
II-8 AC		(Old) Chillaw Road, Negombo	16	1.3	3/2			5,740	5,350	7,263	86.4%	7,692	105.1%	1,952	34.0%	429	5.9%	1.26	7,631.0	6,056.3	
II-9 AC	II-7 AC	Katubedda - Piliyandala Road (B)	17	4.7	3/5B	26.0	99%	25.7	2,301	6,300	3,028	30.7%	3,238	29.8%	937	40.7%	210	6.9%	4.35	35,339.8	8,124.1
2.2 REGULATING COURSE (RC)																					
II-10 RC	II-8 RCAC	Matara - Dickwella (km 163-183)	18	21.0	3/4			1,595	5,200	2,020	30.2%	)									
II-11 RC	II-9 RCAC	Dickwella - Hambantota (km 183-241)	19	59.0	3/4	83.1	100%	83.1	1,347	5,200	1,706	26.4%	2,356	63.7%	1,009	74.9%	650	38.1%	84.02	476,564.8	5,672.0
II-12 RC	II-10 RCAC	Matara - Akuressa	20	21.0	3/3			1,072	5,200	1,358	23.0%	requested									
II-13 RC	II-11 RCAC	Wattala - Mahara Road (B)	21	7.2	3/5A			1,594	5,970	2,097	25.4%	2,242	51.7%	648	40.7%	145	6.9%	7.05	55,195.8	7,829.2	
II-14 RC	II-12 RCAC	Negombo - Giriulla (Main Street)	22	1.6	3/2			2,082	5,200	2,634	41.7%	2,791	53.5%	709	34.1%	157	6.0%	2.00	12,112.6	6,056.3	
		no 15																			
II-16 RC	II-13 RCAC	Beliatta - Tangalla	23	6.5	3/4			814	5,200	1,031	21.9%	1,203	37.0%	389	47.8%	172	16.7%	7.41	46,095.1	6,220.7	
II-17 RC	II-14 RCAC	Kirindiwita - Ganemulla	24	3.0	3/5A	21.3	100%	21.3	1,120	5,200	1,474	22.4%	1,576	49.9%	456	40.7%	102	6.9%	2.63	14,945.8	5,682.8
II-18 RC	dropped	Isurupaya - Pannipitiya	25	6.0	3/5			1,747	5,700	2,299	37.3%	dropped									
TOTAL			417.2			386.5		309.8	87,164		112,122		95,483		30,638			309.72	1,520,011.4		
TOTAL, IDA completed links only									64,845		84,114		95,483	52%	30,638	47.2%	11,369	13.5%	217.72	1,520,011.4	6,981.5

### NOTES & SOURCES:

SAR - Staff Appraisal Report, 03 October, 1990.  
Economic Analysis - Road Development Authority, May 1999.

**TABLE 10: STATUS OF LEGAL COVENANTS**

Agreement	Section	Covenant type	Present status	Original fulfillment date	Revised fulfillment date	Description of Covenant	Comments
	<i>Schedule 4(1)</i>	05	C			Establish and maintain a PMMU with responsibilities, staff, resources and powers satisfactory to IDA	Fulfilled
	<i>Schedule 4(2)</i>	05	C	09/30/1991		Borrower shall employ consultant as an advisor to PMMU.	Fulfilled
	<i>Schedule 4(3)</i>	09	C	09/30/1991		Borrower shall furnish to IDA for review and agreement and annual action plan for the implementation of the project	Fulfilled
	<i>Schedule 4(4)(a)</i>	12	CD	04/15/1991		Borrower shall employ consultant by 04/15/91 to complete Road User Charges Study.	Fulfilled
	<i>Schedule 4(4)(b)</i>	12	CD	05/15/1991		Borrower shall employ consultants by 05/15/91 to complete Construction Industry Study.	Fulfilled
	<i>Schedule 4(4)(c)</i>	12	CD	09/30/1991		Borrower shall employ consultant by 09/30/91 to complete Construction and Maintenance Standards Study.	Fulfilled
	<i>Schedule 4(5)</i>	12	CP			Borrower shall implement recommendations of the studies.	All completed with except for the Road User Charges Study
	<i>Section 4.01</i>	01	CP			Borrower shall maintain project records and accounts and submit and submitted accounts IDA.	Fulfilled

## Covenant types:

- |  |   |
|--|---|
| 1. = Accounts/audits   | 8. = Indigenous people  |
| 2. = Financial performance/revenue generation from beneficiaries | 9. = Monitoring, review, and reporting                                  |
| 3. = Flow and utilization of project funds                       | 10. = Project implementation not covered by categories 1-9              |
| 4. = Counterpart funding   | 11. = Sectoral or cross-sectoral budgetary or other resource allocation |
| 5. = Management aspects of the project or its executing agency   | 12. = Sectoral or cross-sectoral policy/regulatory/institutional action |
| 6. = Environmental covenants                                     | 13. = Other   |
| 7. = Involuntary resettlement                                    |   |

## 8. Present Status:

- C = covenant complied with  
 CD = complied with after delay  
 CP = complied with partially  
 NC = not complied with

**TABLE 11: COMPLIANCE WITH OPERATIONAL MANUAL STATEMENTS**

**Not applicable in this project**

**TABLE 12: BANK RESOURCES: STAFF INPUTS**

Stage of Project Cycle	Planned		Revised		Actual	
	Weeks	US\$	Weeks	US\$	Weeks	US\$
Preparation to Appraisal					43.5	114.0
Appraisal-Board					27.0	82.8
Negotiations through Board Approval					8.7	26.1
Supervision					147.9	447.7
Completion					5.7	18.3
<b>TOTAL</b>					<b>232.8</b>	<b>688.9</b>

TABLE 13: BANK RESOURCES: MISSIONS

Stage of Project Cycle	Month/Year	Number of Persons	Days in Field	Specialized Staff Skills Represented	Performance Rating		Types of Problems
					Implementation Status	Development Objectives	
Through Appraisal	Oct-88	2	16	ENG, HE	—	—	—
	March-89	1	2	ENG			
	May-89	1	6	ENG			
	Nov-89	3	11	ENG, HE, unknown			
	Jan-90	2	17	ENG, HE			
Appraisal through Board Approval	Apr-90	3	20	ENG, HE, DISB			
	March-91	2	3	ENG, HE	2	2	—
	Oct-91	2	12	ENG, TS	2	2	
Supervision	Jun-92	3	14	ENG, ECON	1	1	
	Nov-92	2	16	ECON, HE	1	1	
	Apr-93	3	14	ECON, ENG	1	1	
	Jun-93	2	11	ECON, HE	1	1	
	Dec-93	2	9	ECON, HE	2	1	
	Jun-94	3	11	ECON, ENG, HE	HS	S	
Mid-Term Review	Nov-94	3	16	ECON, HE (2)	S	S	
	March-95	3	19	TS, HE (2)	S	S	
	Sep-95	1	18	HE	S	S	
	Jul-96	2	14	TS, HE	S	S	
	Feb-97	3	13	TS, HE (2)	S	S	
	Jul-97	2	11	HE, PROC	S	S	
	Oct-97	3	11	TS, HE, PROC	S	S	
	March-98	2	7	HE, PROC	S	S	
Completion	Nov-98	3	9	HE, TE, PROC	S	S	
Workshop	May-99	3	5	ENG, HE, TE			
					—	—	—

**Staff Skills:**

ECON = Economist  
ENG = Engineer  
DISB = Disbursement Specialist  
TE = Transport Economist

HE = Highway Engineer  
PROC = Procurement Specialist  
TS = Transport Specialist

**Performance Rating Key:**

HS = Highly Satisfactory  
S = Satisfactory  
U = Unsatisfactory  
HU = Highly Unsatisfactory

**SRI LANKA**  
**THIRD ROADS PROJECT**  
**(CR. 2183-CE)**

**SUPERVISION/COMPLETION MISSION**

**Aide Memoire**  
November 11 to 20, 1998

**ANNEX A**

**Part 1**

NOVEMBER 20, 1998

**SRI LANKA  
THIRD ROADS PROJECT  
(CR. 2183-CE)**

**SUPERVISION/COMPLETION MISSION**

**Aide Memoire**

November 11 to 20, 1998

**A. INTRODUCTION**

1. An IDA mission, comprising Messrs. Jaswant Channe (Highway Engineer, SASIN) and Bill Denning (Transport Economist, TWUTD), visited Sri Lanka between November 11 to 20, 1998, to supervise the Third Roads Project. Messrs. Nancy Zhao (Financial Analyst, SACCO) and Jayantha De Mel (Procurement) of Colombo Office, also joined the mission. The main objectives of the mission were to review the physical progress and financial status of the Project against targets, review and assess completion of the project with respect to physical objectives and targets, disbursements, legal covenants, institutional objectives and final costs of the project at completion, and review with the Borrower the status of preparation of the Borrower's completion report.
2. The mission visited project sites and held meetings with Road Development Authority (RDA) and their consultants. A wrap-up meeting was held on November 20, 1998 under the chairmanship of Mr. W. A. Jayasinghe, Chairman, RDA. The mission wishes to thank officials in the Ministry of Transport and Highways (MT&H) and Road Development Authority (RDA) for the courtesies and cooperation extended to the mission and for making appropriate arrangements for field trips.
3. Annex-1 contains a detailed status of physical progress of the project, Annex-2 is a detailed summary of the status of the Project costs as at June 30, 1998, Annex-3 lists the principal officials met during the mission and Annex-4 shows the details of the project components.
4. This aide-memoire records the findings, understandings and agreements reached between the Government of Sri Lanka (GOSL), RDA and the IDA mission; these are subject to review by IDA management, and will be confirmed in writing by the Country Director for Sri Lanka.

**B. IMPLEMENTATION STATUS**

**Summary of Project Progress and Status**

5. The original Credit closing date for the project was June 30, 1998, except for works under road Contract No. WB3/3 and bridge Contract No. WB3/26, as well as the consultants contract for the supervision of Contract No. WB 3/3, for which a partial extension was granted up to December 31, 1998. The civil works component under the project progressed satisfactorily on most contracts for which the Credit closed on June 30, 1998, except for Contracts WB3/3 and WB3/26, where negligible progress has been achieved due to poor performance of contractors, and the lack of appropriate and timely remedial action by RDA in resolving the difficulties experienced at these contracts caused by delays in mobilization and inefficient project management of the contractors. These two contracts will not be completed by the extended closing date of December 31, 1998. A detailed status of civil works component and progress to October 31, 1998 is provided in paras. 7 to 21 and Annex-1. As defined in the Staff Appraisal Report, various studies under the

project have been completed. The audit reports have been submitted on time and are satisfactory. Various legal covenants under the Credit have also been satisfactorily complied with.

6. Out of US\$ 42.5 million total Credit amount, an amount of US\$ 6.0 remained undisbursed at June 30, 1998. It is possible that out of this remaining undisbursed amount (which includes balance of US\$ 0.3 million in special account), about US\$ 5.6 will remain undisbursed before the extended Credit closing date. In view of an estimated cost overrun under the project of about 16% compared to original estimates, and the current status of slow disbursements, GOSL has submitted a request to IDA to readjust the current (October 1997) disbursement rate of 41% IDA and 59% GOSL to 68.5% and 32.5% for civil works effective October 31, 1998.

### **Detailed Status of Civil Works**

A brief summary of progress on the on-going road works and bridge contracts to October 31, 1998 is as follows:

7. Road Contracts: 4 contracts (*WB3/1*, *WB3/2*, *WB3/5A* and *WB3/4*: Length 283 km) completed; 1 contract (*WB3/5B*: 26 km) – about 24 km completed, with some minor problems on a 0.8 km section out of a total of 4.2 km length of Kutabedda-Piliyandala road, and one contract (*WB3/3*: 88 km) has major contractual problems and may not be completed even before the extended Credit closing date of December 31, 1998. (see paras. 9 & 10).

8. Contract *WB3/2* - 79 km - (*ITASRI J.V.*): (Estimated total cost Rs. 655 million)  
All works under this contract were completed in March, 1998, the extended time for contract completion being July 31, 1997. The Employer has deducted liquidated damages with effect from August 1, 1997 to February 3, 1998. During the maintenance period, there has been no progress on road signs and road markings since August 18, 1998 when the contractor gave notice to RDA of his intention to commence arbitration on all of the Engineer's decisions.

9. Contract *WB3/3* – 89 km - (*BAT International S.p.A.*): (Estimated total cost to completion Rs. 340 million):

Value of physical works completed to October 31, 1998 is only about 20% against 100% programmed, with the extended time for completion having expired on April 1, 1998. The mean monthly output of the contractor over the last 6 months has been Rs. 0.74 million per month. By letter dated May 4, 1998, the contractor pursuant to Sub-Clause 67.1 of the Conditions of Contract, gave notice to the Employer and the Engineer of his intention to commence arbitration on the matters set forth in the decisions of the Engineer dated April 27, 1998 on assessment of the contractor's entitlement under Claim No. 12.

10. RDA has advised the mission that the Employer and the contractor have continued to hold meetings in August, September and October 1998 in an attempt to settle disputes amicably in terms of Clause 67.2 of the conditions of Contract, but no settlement has been agreed to date. With no permanent works executed on site after October 14, 1998, the Engineer has informed the contractor that, to all intents and purposes, the contractor has suspended or abandoned construction of the Works on site. There is no Authorized Representative of the contractor on site since October 12, 1998. RDA also advised the mission that the Engineer considers that the Contractor was currently in default and the Engineer intends issuing a certificate to this effect. The Employer has requested the Attorney General's department to look into issues relating to the termination of this contract, and have instructed the Engineer to commence proceedings to terminate the contract.

11. Contract *WB3/4* - 84 km - (*Keangnam Enterprises Ltd.*): (Estimated total cost Rs. 630 million)

All works under this contract were substantially complete as at September 3, 1998, the extended time for contract completion being April 3, 1998. Miscellaneous items of works are being executed during the maintenance period.

12. Contract WB3/5A - 21 km - (*International Construction Co. Ltd*): (Total cost Rs. 320 million)  
All four road sections under this contract are complete and handed over to the Employer.
13. Contract WB3/5B - 26 km - (*A.K. Diyabalanage Associates*): (Estimated total cost at completion Rs. 414 million)  
Works under this contract are being carried out entirely by sub-contractors (ICC Ltd., Tudawe Bros. Ltd. & Link Engineering Ltd.). All works are substantially complete, except for a small section of about 1.6 km at Katubedda-Piliyandala Road (Link Engineering), where the scope of work was increased. This road section is expected to be completed by the revised date for completion of November 15, 1998.
14. 5 contracts (comprising 13 bridges) out of a total 8 contracts (comprising total 19 bridges) are complete; the balance of works remaining after the original and the extended Credit closing dates, is expected to be completed by RDA from their own resources. RDA has advised the mission that they are going to recover the damages and losses to GOSL caused by delayed works by the contractors by enforcing appropriate measures provided in the Conditions of Contract for these contracts.
15. Contracts WB3/23 and WB3/24: (Bridge Nos. 1/1, 92/2, 94/1 & 8/5) - (*RCDC*)  
All 4 bridges under these contracts were completed on August 30, 1995.
16. Contract WB3/25: (Bridge Nos. 112/1, 12/6 & 13/1) - (*Edward & Christie Pvt. Ltd*)  
The 3 bridges under these contracts were substantially completed on February 12, 1998.
17. Contract WB3/26: (Bridge No. 119/1) - (*Edward & Christie Pvt. Ltd.*)  
The progress on sinking of caisson foundations is being done manually and is extremely slow. Physical progress to October 30, 1998 is only 25% and the extended date of completion as May 23, 1998. This bridge cannot be completed before the Credit closing date of December 31, 1998.
18. Contract WB3/27: (Bridge No. 4/2) - (*A.K. Diyabalanage Associates*)  
The progress of work at this bridge has been delayed due to flooding of the river. The work is being completed by RDA from their own resources after the Credit for this component closed on June 30, 1998.
19. Contract WB3/29P: (Bridge Nos. 6/1, 11/1, 13/1 & 2/2)) - (*A.K. Diyabalanage Associates*)  
The work at these two bridge sites is progressing very slowly and the progress to June 30, 1998 was only 26%. The works is being completed by RDA from their own resources after the Credit for this component closed on June 30, 1998.
20. Contract WB3/29Q: (Bridge Nos. 116/3, 121/3, 144/2 & 159/2) - (*Edward & Christie Pvt. Ltd*)  
The 4 four bridges under this contract have been substantially completed in March, 1998.
21. Contract WB3/29S: (Bridge Nos. 163/3 & 8/8) - (*Edward & Christie Pvt. Ltd.*)  
The two bridges under this contract have been substantially completed in February, 1998.

### **Supervision Consultants**

22. (*Scott Wilson Kirkpatrick/RDC*): RDA has advised the mission that the second extension of consultancy services to December 31, 1998 for the supervision of road contracts is currently in the process

of being approved by the Cabinet. IDA had advised RDA that payments to consultants cannot be processed until this extension is approved.

23. Chandrasena and Partners: The consultancy contract for the supervision of bridge Contracts WB3/25, 26 & 27 expired on June 30, 1998. RDA has taken over the supervision of works remaining under these contracts.

#### **Technical Standards**

24. Highway Design, Pavement Design and Bridge Design Manuals: The mission advised RDA that IDA has received the Bridge Design Manual only; the Highway Design Manual and Pavement Design Manuals are yet to be received.

#### **Financial Status**

25. Based on the loan disbursement status report (November 31, 1998), about SDR 4.02 million will remain undisbursed at Credit closing. An amount of about SDR 0.5 million is committed to be paid to the contractors/consultants and will be disbursed as soon as the quantities and outstanding claims of the contractors are finalized.

#### **Financial Management**

26. Project Accounts, Audit and Review of Statements of Expenditures: The Audit Report on the Project Accounts for year ended December 31, 1997 was received by IDA in August 1998. RDA were advised to take necessary action to rectify the deficiency noted in the report concerning inadequate evidence for receivables, payables, work in progress and consultancy services. The documentation under SOE accounts were examined during the mission and was found satisfactory.

#### **Credit Closing Date**

27. At a meeting held with the Chairman, RDA, on November 18, 1998, the Bank confirmed that the Credit closing date of December 31, 1998 for Contracts WB3/3 and WB3/26 remains unchanged. Reimbursement of expenditures incurred on or before the closing date of December 31, 1998 would be allowed beyond a period of four months after the Credit closing date up to April 30, 1999.

#### **Preparation of Implementation Completion Report (ICR)**

28. The mission reviewed data made available by RDA and requested to provide the following additional data: (i) RDA expenditures for routine and for periodic maintenance, both over the last several years and projected for the next 3-5 years, for the country as a whole and, if possible, broken out for the Hambantota, Matara, Galle, Kalutara, Colombo, Ratnapura, and Gampaha districts. (ii) the RDA will supply, by the end of November 1998, the needed regular traffic count, special traffic count, axle load, and roughness surveys to enable consultants to conduct the revised economic evaluation. The RDA will arrange to have the revised economic evaluation completed in draft form by February 15, 1999 and in final form by March 1, 1999. Terms of reference for the economic evaluation were provided to RDA to allow them to engage consultants.

### **Borrowers Contribution to ICR**

29. The mission advised RDA that in accordance with the the "General Conditions Applicable to Development Credit Agreements", the Borrower is required to prepare its own evaluation report on the project and submit this to the Bank by March 1, 1999. The evaluation report/summary, which is attached unedited to the ICR should include:

- (i) an assessment of the project objectives, design, implementation and operation experience;
- (ii) an evaluation of Borrower's own performance during the evolution and implementation of the project, with special emphasis on lessons learned that may be relevant in the future; and
- (iii) the evaluation of the performance of the Bank and any co-financiers during the evolution and implementation of the project, including effectiveness of the relationship among the Borrower, the Bank and co-financiers, with special emphasis on lessons learned.

### **Sustainable Maintenance**

30. During the last mission in October 1997, IDA had requested RDA to provide information/data on arrangements for maintaining the completed facilities and regarding the adequacy of routine and periodic maintenance allocations in the upcoming budget. RDA advised the mission that this information will be provided to IDA by December 15, 1998.

### **GOSL's Future Plans for the Roads Sector.**

31. The question of priority investments for future road work was discussed with officials the Department of External Resources and the National Planning Department in the Ministry of Finance and Planning and staff of the Road Development Authority (RDA) and the Southern Provincial Road Development Authority. The priorities described are:

- \* a new 6-lane highway linking Colombo with Katunayake, the location of the international airport, to be implemented by GOSL through BII and RDA;
- \* Southern Expressway Development Project – Feasibility completed under TA from ADB;
- \* Colombo-Kandy Highway – Pre-feasibility underway - SIDA funding;
- \* Southern Province Road Improvement Project – ADB funded project implemented under PRDA for improvement of Class C and D roads.

Other priorities described were the Outer Circular Road for Colombo, the southern extension of Base Line Road in Colombo, extending the program of provincial highway rehabilitation to Western, Uva, and North-Central Provinces, widening of the A4 Highway from 2 to 4 lanes between Kirillapona (in Colombo) to just beyond Homagama, and relocating a slip-prone section of Highway A4 between Beragala and Wellawaya.

There was also some discussion of a new road on an interior alignment to provide tea producers with better access to Colombo. This would start at Morawaka in Matara District and pass near Neluwi, Pelawatta, Matugama, and then to Colombo. An improved access road from Elpitiya to route A2 at Bentara was suggested. A major rehabilitation of the Colombo-Trincomalee highway was also suggested, possibly as an extension or a "Y" off the Colombo-Kandy project.

### **C. SUMMARY OF ACTIONS AGREED**

32. The following next steps were agreed:

- a) Send to IDA final copies of the standard manuals for Highway December 1, 1998

Design, Bridge Design, Construction & Maintenance and  
Pavement Design

- b) Provide maintenance strategy and data December 15, 1998.
- c) Send to IDA GOSL's contribution to ICR, including economic evaluation. March 1, 1999

Mr. W. A. Jayasinghe

Chairman  
Road Development Authority

November 20, 1998

Jaswant Channe

Task Leader  
(IDA Supervision Mission)

**THIRD ROADS PROJECT  
DETAILED STATUS OF PHYSICAL PROGRESS OF PROJECT**

1.1. The overall status of the project road and bridge components as at October 31, 1998 is as follows:

Contract No.	Length (km)	Contractor	Supervision Consultant	Tender Amount (Rs. m.)	Cost of Compl.	Start Date	Completion Date (Revised)	Progress To Date
<b>CONTRACTS WHICH LOAN AGREEMENT ENDED ON 30TH JUNE 1998.</b>								
<b>Road Contracts</b>								
WB3/1 (EDFC Funded)	92	Keangnam (Korea)	KCI	845.60	809.00	1/1/91	12/30/94	100%
WB3/2	66.12	ITASRI JV (Italy)	SWKP/RDC	489.43	* 655.00	1/21/92	11/30/96 (31/07/97)	99%
WB3/3-P1	44	SD & CC (Sri Lanka)	SWKP/RDC	26.56	16.00	12/28/94	31 Dec. 1995	100%
WB3/3-P2	44	UTE (Sri Lanka)	SWKP/RDC	41.94	20.00	12/28/94	31 May 1996	100%
WB3/4	83	Keangnam (Korea)	SWKP/RDC	483.64	630.00	9/5/95	9/4/97 (13/04/98)	94%
WB3/5A	21.23	ICC (Sri Lanka)	SWKP/RDC	315.75	320.00	12/19/94	12/18/96 (02/05/97)	100%
WB3/5B	25.94	AKDA (Sri Lanka)	RDA (From: 30/09/98)	366.95	* 414.00	12/18/94	8/31/97 (30/04/98)	90%
<b>Bridge Contracts</b>								
No. of Bridges								
WB3/23	1	RC&DC (Sri Lanka)	C & P	20.30	50.00	5/20/92	8/30/95	100%
WB3/24	3	RC&DC (Sri Lanka)	C & P	29.00		5/20/92	8/30/95	100%
WB3/25	3	E & C (Sri Lanka)	RDA (From: 30/06/98)	29.30	* 30.00	7/13/95	12/2/97	100%
WB3/27 Br. 4/2	1	AKDA (Sri Lanka)	RDA (From: 30/06/98)	18.70	* 23.00	8/18/95	12/31/98	45%
WB3/29P Br. 6/1	4	AKDA (Sri Lanka)	RDA (From: 30/06/98)	45.70	* 55.00	5/30/95	5/29/97 (31/01/98)	25% 30% 27%
Br. 11/1								45%
Br. 13/1								Deleted
Br. 2/2								Deleted
WB3/29Q	4	E & C	RDA	27.40	28.00	5/30/95	5/29/97 (31/01/98)	100%
WB3/29S	2	E & C	RDA	28.30	26.00	5/30/95	5/29/97 (31/01/98)	100%
<b>CONTRACTS WHICH LOAN AGREEMENT ENDS ON 31ST DECEMBER 1998.</b>								
<b>Road Contract</b>								
WB3/3	88	BAT Inter. (Italy)	SWKP/RDC	463.39	* 615.00	2/6/96	9/4/97 (31/03/98)	22%
<b>Bridge Contract</b>								
WB3/26 Br. 119/1	1	E & C (Sri Lanka)	RDA (From: 30/06/98)	25.20	* 33.00	7/13/95	5/23/98 (31/05/98)	18%

\* - Estimated cost at Completion

**THIRD ROADS PROJECT  
LIST OF OFFICIALS MET**

Ministry of Finance & Planning

Mr. Faiz Mohideen	Director General, Department of External Resources
Ms. P. Alailima	Director General, National Planning Department
Ms. N. Madanayaka	Director, World Bank Division for DG/ERD
Ms. M. Dissanayake	National Planning Department

Ministry of Transport and Highways

Mr. G. Hewagama	Secretary
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Road Development Authority

Mr. W.A. Jayasinghe	Chairman, RDA
Mr. P.B.L. Cooray	General Manager
Mr. D.B. Wanasinghe	Director, Contracts Management Division
Mr. P. Gunawardena	Add. Director, Contracts Management Division
Mr. D.H.R. Fernando	Deputy Director, Contract Management Division
Mr. D.G.S. Chandralal	Chief Engineer, WB3/3 & WB3/4
Mrs. C. Perera	Chief Engineer, WB3/5B
Mr. K. Fernando	Director, Programming and Planning Division
Mr. L. Rajapakse	Director, Maintenance Management and Construction Division

Project Management and Monitoring Unit (PMMU)

Mr. D.G.S. Chandralal	Chief Engineer, Roads, RDA.
Mr. R.J. Naotunna	Engineer, PMMU.

Attorney General's Department

Mr. A. Goonerathne	Deputy Solicitor General
Mr. A. Gunawansa	State Counsel

Transport Studies and Planning Center (TSPC)

Mr. D.S. Jayaweera	Deputy Director, Planning
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Scott, Wilson, Kirkpatrick and Partners/Resource Development Consultants Ltd.  
(Supervision of Road Contracts)

Mr. G. Thomas	'Engineer', (SWK)
Mr. C. Tolley	Engineer's Representative (SWK)
Mr. N. Curtin	Resident Engineer, WB3/3 & WB3/4 (SWK)
Mr. M.J. Pickup	Contracts (SWK)
Mr. A. R. N. Perera	Managing Director, RDC
Mr. A. Gamoathighe	Social Impact Specialist

**THIRD ROADS PROJECT  
PROJECTS COMPONENTS**

Contract WB3/1

Moratuwa - Galle - A2 (92.0 km) *(completed under EDFC Funding)*

Contract WB3/2

Thoppu – Dankotuwa – Giriulla - B419 & B308 - (31.93 km)

Nittambuwa – Veyangoda - Katunayake - B17 – (26.28 km)

Seeduwa – Udugampola – B400 - (6.81 km)

Biyawwila – Ganmulla – B058 - (8.41 km)

Ngombo Town Roads – B322, 261 & 407 - (11.94 km)

Contract WB3/3

Galle - Matara - A2 - 45.8 km.)

Matara – Akuressa - A24 - (21.0 km)

Matara - Hakmana - B57 - (22.0 km.)

Contract WB3/4

Matara - Hambantota - A2 - (76.0 km)

Tangalle – Beliatta - B55 – (7.4 km)

Contracts WB3/5A

Peliyagoda – Kadawatha – AA001 - (8.02 km)

Hendala - Hunupitiya – B151 – (3.6 km)

Watala - Mahara - B460 - (7.03 km)

Kirindiwita – Ganemulla – B226 - (2.63 km)

Contract WB3/5B

Dehiwela - Maharagama - B094 - (4.15 km)

Hanwella - Kaduwela - AB010 - (14.2 km)

Katubedda - Piliyandala – B295 & B204 - (4.1 km)

Nawinna -Mirhana – B291 - (3.4 km)

Bridge Contract WB3/23 and WB3/24

Bridge No. 1/1 on Nittambua – Veyangoda Road

Bridge No. 92/2 & 94/1 on Colombo – Galle – Hambantota – Wellawaya Road

Bridge No. 8/5 on Matara – Akuressa Road

Bridge Contract WB3/25

Bridge No. 112/1 on Colombo – Galle – Hambantota – Wellawaya Road

Bridge No. 12/6 & 13/1 on Matara – Hakmana Road

Bridge Contract WB3/26

Bridge No. 119/1 on Colombo – Galle – Hambantota – Wellawaya Road

Bridge Contract WB3/27

Bridge No. 4/2 on Wattala – Mahara Road

Bridge Contract 29P

Bridge Nos. 6/1, 11/1 & 13/1 on Katunayake – Nittambua Road

Bridge No. 2/2 on Hunupitia – Hendala Road

Bridge Contract 29Q

Bridge Nos. 116/1, 121/3, 144/2 and 159/2 on Colombo – Galle – Hambantota – Wellawaya Road

Bridge Contract 29 S

Bridge No. 163/3 on Colombo – Galle – Hambantota – Wellawaya Road

Bridge No. 8/8 on Matara – Hakmana Road

NOTE:

Bridge Contracts WB3/21, 22 & 28

Bridge Nos. 51/1, 54/4 and 45/5 originally in EDFC contract were excluded from the project.

**SRI LANKA**  
**THIRD ROADS PROJECT**  
**(CR. 2183-CE)**

**ICR DISCUSSION MISSION**

**Aide Memoire**  
May 17 to 21, 1999

**ANNEX A**

Part 2

MAY 21, 1999

**SRI LANKA  
THIRD ROADS PROJECT  
(CR. 2183-CE)**

**ICR DISCUSSION MISSION**

**Aide Memoire**

May 17 to 21, 1999

1. An IDA mission, comprising Messrs. Jaswant Channe (Highway Engineer, SASIN), Juan Gaviria (Senior Transport Economist, SASIN) and Bill Denning (Transport Economist, TWUTD), visited Sri Lanka between May 17 to 21, 1999, to discuss the draft Implementation Completion Report (ICR) for the Third Roads Project. The main objectives of the mission were to (i) discuss with RDA and GOSL the main findings of the draft ICR and incorporate the Borrower's comments in the final ICR, and (ii) discuss with RDA and key project stakeholders in a Workshop the achievements of the Project, and (iii) discuss with GOSL future directions, dialogue and areas for IDA assistance in the road transport sector in Sri Lanka.
2. A stakeholders workshop to discuss the ICR, arranged by the World Bank, was held at Colombo on May 19, 1999. The mission expresses its appreciation to the Ministry of Transport and Highways (MT&H) and in particular the Road Development Authority (RDA) and the key project stakeholders for participating in the workshop and continue a dialogue for possible IDA assistance in the road transport sector in Sri Lanka.
3. The conclusions and understandings presented in this aide-memoire are subject to review by IDA management, and will be confirmed in writing by the Country Director for Sri Lanka.
4. **ICR Workshop:** As stated above, during the mission a stakeholders Workshop was carried out to review the ICR. A list of the participants is attached in Annex 1. The main topics of discussion included:
  - Achievements of the Third Roads Project and summary findings from the Borrowers contribution to the ICR (RDA)
  - Summary of findings of Implementation Completion Report, focusing on achievements problems and lessons learnt from the Third Roads Project - (World Bank)
  - Development of the Local Contracting Industry (NCCASL)
  - Experience with Reform of Road Agencies Worldwide and Sector Policies for World Bank funding in road projects (World Bank).
5. **Summary of Findings of the ICR:** The Completion Report highlights that the overall project rating is satisfactory. This rating was discussed in the Workshop and is based on the following:
  - The project objectives were not fully achieved for civil works contracts. Only about 310 km of roads out of 387 km planned were completed, and only 13 bridges out of 19 planned (including 1 deleted bridge) were completed;
  - A Project Management and Monitoring Unit (PMMU) is fully operational and appears to continue now in charge of all donor funded road projects;

- Even though the project had limited institutional development activities, the project was only partially successful in implementation of these objectives. During the project, three main studies were executed including: (i) Studies on Road User Charges, (ii) Domestic Road Contracting Industry and Road Materials Design and (iii) Construction Standards satisfactorily completed. RDA is now streamlining the findings of the studies in the design and planning activities of RDA;
- The project encouraged the development of the local contractor industry. The project was partially successful in this objective given that two of the local contractors were not able to perform as expected.

**6. Issues Raised in the Workshop:** The main issues raised during the Workshop include the following:

- in future operations a more holistic approach to design should be adopted, to address technical (minor realignments where necessary), environmental, social (resettlement planning), relocation of utilities, safety audit;
- RDA should put more emphasis on pre-qualification of contractors to ensure works awarded to competent contractors who can complete the works within the contract period;
- GOSL should establish quarry sites and other material sources prior to tendering and award of contracts;
- need to further encourage the role of local contracting industry with emphasis on training of contractors in project management and financial control;
- RCDC has played important role and is now a mature contractor; RCDC is willing to consider private-public partnerships including the benefits of divesting some of its shares;
- need for streamlining of procurement procedures to avoid delays in contract awards including the empowerment of RDA to carry out decision-making;
- need for strict monitoring of poorly performing contractors and taking timely corrective action; termination of contracts not considered a good alternative by RDA;
- need to encourage a more proactive role of consultants during project implementation and improved relations between the employer/contractor and consultants.

**7. GOSL's Future Plans for the Roads Sector.**

The question of priority investments for future road works was discussed with officials the Department of External Resources and the National Planning Department in the Ministry of Finance and Planning and staff of the Road Development Authority (RDA). The RDA has a plan for the next decade which will be shared with the World Bank. A rolling multi-year priority exercise is being carried out by RDA.

**8. Some of the priorities identified by RDA for external funding are:**

- \* Southern Highway Development Project – Feasibility completed under TA from ADB; financing arrangements with OECF/ADB under discussion;

- \* a new 4-lane highway linking Colombo with Katunayake, the location of the international airport, to be implemented by GOSL through BII and RDA; bids already received
- \* the southern extension of Base Line Road in Colombo (7.4 km); financing arrangements with OECF/ADB under discussion;
- \* Outer Circular Highway for Colombo (48 km) – OECF funding under discussion;
- \* Colombo-Kandy Highway – Pre-feasibility underway - SIDA funding;
- \* widening of the A4 Highway from 2 to 4 lanes between Kirillapona (in Colombo) to Homagama (16.5 km);
- \* relocating a slip-prone section of Highway A4 between Beragala and Wellawaya (45 km);
- \* Katunayaka-Padeniya Highway.

9. Other priorities described were the Southern Province Road Improvement Project – ADB funded project implemented under Provincial RDA for improvement of Class C and D roads, and. extending the program of provincial highway rehabilitation to Western, Uva, and North-Central Provinces,

10. Of lesser priority, a new road on an interior alignment is being considered also to provide tea producers with better access to Colombo. This would start at Morawaka in Matara District and pass near Neluwi, Pelawatta, Matugama, and then to Colombo. An improved access road from Elpitiya to route A2 at Bentara was suggested. A major rehabilitation of the Colombo-Trincomalee highway was also suggested, possibly as an extension or a "Y" off the Colombo-Kandy project.

11. The mission requested RDA for a copy of their recently prepared priority investment plans. Also, RDA agreed to inform the Bank of their concrete plans to initiate a reform and modernization process of RDA and RCDC. These documents would be considered by the Bank in discussing possible follow-up support and assistance to the road sector.

12. The mission also carried out discussions with RDA to prepare the proposed Workshop on Road Finance and Management Reform which is scheduled to take place in Colombo on June 16-17, 1999. An agenda for finance and management reform is expected to be drawn during this Workshop to provide guidance in the process ahead.

Jaswant Channe

Task Leader  
(IDA Mission)

May 21, 1999

**THIRD ROADS PROJECT  
ICR DISCUSSION WORKSHOP  
LIST OF PARTICIPANTS**

Ms. N. Madanayaka	Director, World Bank Division for DG/ERD
Mr. D.S. Jayaweera	Deputy Director, Planning, Ministry of Finance
Ms. M.J. Sahabandu	National Transport Commission
Mr. P. Dayananda	Ministry of Highways
Mr. R. Thabrew	Deputy Director General, Bureau of Infrastructure Investment
Mr. W.A. Jayasinghe	Chairman, RDA
Mr. D.P.C. Megooda	General Manager, RDA
Mr. W.A.S. Weerasinghe	Contracts Management Division RDA
Mr. G.S.C. Rodrigo	Contracts Management Division RDA
Mr. J. Fernando	Chairman, RCDC
Mr. A.S. Kumaraage	University of Moratuwa
Mr. N.U. Mendis	Sri Lanka Railways
Mr. E. De Zylva	NCCASL & SAARC
Mr. M. Chandrasena	Chandrasena & Partners
Mr. K. P. J. Perera	Resource Development Consultants Ltd.
Mr. R.S. Jayaratne	Resource Development Consultants Ltd.
Mr. D.S. Jayeweera	Resource Development Consultants Ltd.
Mr. H. Matsunaga	OECD
Mr. J. Gaviria	World Bank (SASIN)
Mr. J. De Mel	World Bank, Colombo Office
Mr. W. Denning	World Bank (TWUTD)
Mr. J. Channe	World Bank (SASIN)

**THIRD ROADS PROJECT  
DETAILED STATUS OF PHYSICAL PROGRESS OF PROJECT**

1.1. The overall status of the project road and bridge components as at March 31, 1999 is as follows:

Contract No.	Length (km)	Contractor	Supervision Consultant	Tender Amount (Rs. m.)	Cost of Compl.	Start Date	Completion Date (Revised)	Progress To Date
<b>CONTRACTS WHICH LOAN AGREEMENT ENDED ON 30TH JUNE 1998.</b>								
<b>Road Contracts</b>								
WB3/1 (EDFC Funded)	92	Keangnam (Korea)	KCI	845.60	857.84	1/1/91	12/30/94	100%
WB3/2	76.10	ITASRI JV (Italy)	SWKP/RDC	489.43	639.88	1/21/92	11/30/96 (31/07/97)	100%
WB3/3-P1	44	SD & CC (Sri Lanka)	SWKP/RDC	26.56	16.00	12/28/94	31 Dec. 1995	100%
WB3/3-P2	44	UTE (Sri Lanka)	SWKP/RDC	41.94	20.00	12/28/94	31 May 1996	100%
WB3/4	83	Keangnam (Korea)	SWKP/RDC	483.64	645.46	9/5/95	9/4/97 (13/04/98)	100%
WB3/5A	21.23	ICC (Sri Lanka)	SWKP/RDC	318.75	310.00	12/19/94	12/18/96 (02/05/97)	100%
WB3/5B	25.94	AKDA (Sri Lanka)	RDA (From: 30/09/98)	366.95	* 414.00	12/18/94	8/31/97 (15/11/98)	99%
<b>Bridge Contracts</b>								
No. of Bridges								
WB3/23	1	RC&DC (Sri Lanka)	C & P	20.30	48.41	5/20/92	8/30/95	100%
WB3/24	3	RC&DC (Sri Lanka)	C & P	29.00		5/20/92	8/30/95	100%
WB3/25	3	E & C (Sri Lanka)	RDA (From: 30/06/98)	29.30	25.26	7/13/95	12/2/97	100%
WB3/27 Br. 4/2	1	AKDA (Sri Lanka)	RDA (From: 30/06/98)	18.70	* 23.00	8/18/95	12/31/98	65%
WB3/29P Br. 6/1	4	AKDA (Sri Lanka)	RDA (From: 30/06/98)	45.70	* 55.00	5/30/95	5/29/97 (31/01/98)	52% 40% 27%
Br. 11/1								85%
Br. 13/1								Deleted
Br. 2/2	(deleted)							Deleted
WB3/29Q	4	E & C	RDA	27.40	28.00	5/30/95	5/29/97 (21/11/97)	100%
WB3/29S	2	E & C	RDA	28.30	24.32	5/30/95	5/29/97 (27/11/97)	100%
<b>CONTRACTS WHICH LOAN AGREEMENT ENDS ON 31ST DECEMBER 1998.</b>								
<b>Road Contract</b>								
WB3/3	88	BAT Inter. (Italy)	SWKP/RDC	463.39	* 615.00	2/6/96	9/4/97 (31/03/98)	22%
<b>Bridge Contract</b>								
WB3/26 Br. 119/1	1	E & C (Sri Lanka)	RDA (From: 30/06/98)	25.20	* 33.00	7/13/95	5/23/98 (23/05/98)	38%

\* - Estimated cost at Completion

**GOVERNMENT OF THE REPUBLIC OF  
SRI LANKA**

**MINISTRY OF TRANSPORT AND HIGHWAYS**

**THIRD ROADS PROJECT**

**(CR. 2183-CE)**

**BORROWERS EVALUATION OF THE PROJECT**

**ROADS DEVELOPMENT AUTHORITY**

**ANNEX B**

## **THIRD ROADS PROJECT**

### **BORROWERS EVALUATION OF THE PROJECT**

#### **INTRODUCTION**

The Credit agreement for funding the Third Roads Project was approved by the IDA and signed between the World Bank and the Government of the Democratic Socialist Republic of Sri Lanka on 30<sup>th</sup> November 1990 for a sum of SDR equivalent 30.6 Million (US \$ 42.5 Million). A further sum of U.S.\$ 14.5 Million was co-financed by EDCF and these funds were used to finance the first contract to be awarded. Contribution made by the Sri Lanka Government is US \$ 13.5 Million. Loan period was fixed as 7 years 7 months ending in 30<sup>th</sup> June 1998. However some of the contracts awarded were not completed by this day. The World Bank agreed for an extension of loan closing date up to 31<sup>st</sup> December 1998 on one ICB and one LCB contract.

The project's objectives were to: (a) reduce the road transport cost and delays of passenger and goods transportation by restoring major trunk roads to better operational condition; (b) help to restore priority road infrastructure damaged by flooding and landslide in May/June 1989; (c) enhance the institutional capabilities to increase the quality and extent of road maintenance and rehabilitation; and improve technical standard; and find out more efficient and cost effective method to use locally available materials and (d) upgrade RDA's capacity to supervise and execute rehabilitation works and to identify actions needed to develop the local road contracting industry.

#### **ASSESSMENT OF THE PROJECT OBJECTIVES**

The project objectives have been defined with a clear sense of reality, taking into consideration the vital importance of the road transport sector and its contribution to the development activities of the country. Road transport is essentially the main mode of Internal transport for goods and passengers in the country with other forms of transport like water, air, excepting railways, only contributing in a very minor way. Railway system has been in use for over one hundred years now, but it has not made any significant improvement over to recent past and has taken a second place in the transport system. As such road transport is the main mode of transport in the country providing access to cities, towns and the villages in varying levels of service.

Damaged or highly uneven road surfaces cause significant increases in vehicle operation costs due to increased tyre wear, reduced fuel efficiency and increased vehicle damage. It can also contribute to vehicle accidents and make the road unsafe for its users.

Improving the strength and riding quality of the roads is therefore of vital importance to the economic progress of the country. For the successful implementation of the national master plan for development; a sound road network infrastructure is essential. Thus the objectives of this project can be considered as an aim to fulfill this requirement in some measure.

Sri Lanka has a total road length of around 97400 km of which around Km 10400 are categorized as Class A or B Roads which are maintained by the Road Development Authority (RDA), an institution specifically established for fulfilling this Task. The functions of the RDA is to maintain the existing arterial network and to improve its quality and standards to such levels so as to enable these roads to be

able to cater for the increased loads and volume of vehicles that can be anticipated in the future taking the development plans and potentials into consideration. To achieve this, it is very important to make this organization fully capable of using modern technologies available in the field of road and bridge design, maintenance and construction. Thus the proposal to enhance the organization capability under this project is very important and welcome.

Construction, Rehabilitation and Maintenance of roads consume a large quantity of local material such as earth, gravel, metal etc. Earth for embankment filling, Gravel for sub base and base construction and Metal for base, and wearing course works either in asphalt concrete or an SBST or DBST. Quality requirements of these materials vary depending on the item of work for which it is used.

Therefore it is very important to identify the quality of these materials available in different areas or locations, thereby enabling suitable materials to be easily resourced for works. At the same time the development of design standards and specifications to suite the use of these locally available materials is envisaged as a part of this project. This can be considered as a vital exercise as the cost benefits in road transportation can be greatly improved by the proper and technically correct use of locally available materials.

### ***PROJECT IDENTIFICATION, PREPARATION AND APPRAISAL***

Identification of roads for improvement is essentially based on the volume of traffic its composition and the present condition of the road. Initially this identification is done in the RDA and subsequently an International Consultant is selected with the Bank concurrence for undertaking a pre-feasibility. Upon its successful completion and based on the findings and the recommendations, a feasibility and a detailed engineering study of the project is undertaken by the consultant. These exercises were satisfactorily carried out and implementation of the project was approved by the Government and the Bank after careful review of the consultants findings and recommendations.

Geometric alignment of the roads in this project could not be improved since land acquisition was not accommodated in the feasibility report. Improvement of the road surface without the improvement in geometric alignment of the road has led to many accidents. It is strongly felt that this type of situation should be avoided in future projects.

Following roads and bridges were included into this project after review by the Bank.

1. Part of A2 road from Moratuwa - Galle - Matara - Dickwella - Hambantota - 225 Km

2. Following road sections in the Southern province

Matara - Akuressa road	-	21 Km
Matara - Hakmana Road	-	24 Km
Tangalle – Beliatta Road	-	<u>6.5 Km</u>
		<u>51.5 Km</u>

3. Following road Sections in the Western Province

Kaduwela – Hanwella road	-	12.5 Km
Toppu-Dankotuwa-Girulla Road	-	32.0 Km
Peliyagoda-Kadawatha Road	-	8.0 Km
Dehiwela-Maharagama Road	-	7.6 Km
Navinna-Mirihana Road	-	3.4 Km
Hunupitiaya-Hendala Road	-	4.0 Km

Katubedda-Piliyandala Road	-	4.7 Km
Wattala-Mahara Road	-	7.2 Km
Katunayake-Nittambuwa Road	-	26.0 Km
Biyawilla-Ganemulla Road	-	3.0 Km
Seeduwa – Udugampola Road	-	12.0 Km
Isurupaya-Pannipitiya Road	-	<u>6.0 Km</u>
		<u>126.4 Km</u>

4. Following road Sections in the Negombo Town in the Western Province

Along Negombo-Giriulla Road	-	1.6 Km
Along Chillaw Road, Negombo	-	1.3 Km
St. Joseph Street, Negombo	-	<u>2.8 Km</u>
		<u>5.7 Km</u>

All the above road sections were found to be in a severely distressed condition with an International Roughness Index of around 3500 to 6000mm/km. In most cases the carriageway edges have failed reducing its effective width, side drains are mostly blocked or non existing and most culverts are blocked and non functioning.

5. Repair, rehabilitation or reconstruction of the following bridges.

Bridge Nos. 45/5, 51/1, 54/4, 56/2, 92/2, 94/1, 112/1, 116/3, 119/1, 121/3, 144/2, 159/2 and 163/3 on Colombo-Galle-Hambantota-Wellawaya Road.

Bridge Nos. 6/1, 11/1, 13/1 and 1/11 on Katunayake-Nittambuwa Road

Bridge Nos. 8/8, 12/6 and 13/1 on Matara-Hakmana Road

Bridge No. 2/2 on Hunupitiya – Hendala Road

Bridge No. 8/5 on Matara-Akuressa Road

Bridge No. 42/2 on Wattala-Mahara Road

Bridge No. 1/3 on Kiridiwita-Ganemulla Road

The existing bridges are either, steel, reinforced concrete or of prestressed concrete construction. Level of improvement in each case was determined according to the present level of deterioration.

### **PROJECT IMPLEMENTATION**

Several contracts were awarded for the implementation of the project as follows:

#### **Four ICB Contracts**

1. Contract No. WB3/1 - Panadura – Galle Road
2. Contract No. WB3/2 - Toppu-Dhankotuwa-Giriulla Road  
Katunayake-Veyangoda-Nittambuwa Road

Seeduwa-Udugampola Road, Biyanwila-Ganemulla road, Negombo Town Rds.

3. Contract No. WB3/3 - Galle-Matara, Matara-Akuressa and Matara-Hakmana Roads. Paving works
4. Contract No. WB3/4 - Matara-Hambantota and Tangalle-Beliatta Roads

#### Twelve LCB Contracts

1. Contract No. WB3/3-P1- Preliminary works on Galle-Matara Road
2. Contract No. WB3/3-P2- Preliminary works on Matara-Akuressa and Matara – Hakmana Road
3. Contract No. WB3/5A - Peliyagoda-Kadawatha Road  
Hendala-Hunupitiya, Wattala-Mahara  
and Kirindiwita-Ganemulla Road
4. Contract No. WB3/5B - Kaduwela-Hanwella Road  
Dehiwela-Maharagama Road  
Katubedda-Piliyandala Road  
Nawinna-Mirihana Road
5. Contract No. WB3/23- Bridge No. 1/1 on Katunayake-Nittambuwa Road
6. Contract No. WB3/24- Bridge Nos. 92/2, 94/1 on Colombo-Galle-Hambantota Road and Bridge No. 8/5 on Matara-Akuressa Road
7. Contract No. WB3/25- Bridge No. 112/1 on Colombo-Galle-Hambantota Road  
Bridge No. 12/6 and 13/1 on Matara-Hakmana Road
8. Contract No. WB3/26- Bridge no. 119/1 on Colombo-Galle-Hambantota Road
9. Contract No. WB3/27- Bridge No. 4/2 on Wattala-Mahara Road
10. Contract No. WB3/29P- Bridge Nos. 6/1, 11/1, 13/1 on Katunayake-Nittambuwa Road  
Bridge No. 2/2 on Hendala-Hunupitiya Rd
11. Contract No. WB3/29Q- Bridge No. 8/8 on Matara-Hakmana Road  
and Bridge No. 163/3 on Colombo-Galle-Hambantota-Wellawaya Road
12. Contract No. WB3/29S- Bridge Nos. 116/3, 121/3, 144/3 and 159/2 on Colombo-Galle-Hamabantota-Wellawaya Road.

Rehabilitation and improvement of 387 km of Class A & B roads and the reconstruction or rehabilitation of 19 No. bridges on the National road network were identified to be done under this project. Four contracts of total value Rs 2.28 Billion were tendered on ICB conditions and 12 contracts of total value Rs. 860 Million were tendered on LCB condition. Contractors were selected by a tender board on the recommendations made by a technical evaluation committee who have evaluated the tenders based on a stipulated criteria. World Bank approval was obtained prior to award.

## ***ACHIEVEMENT OF PROJECT OBJECTIVES***

At the time of loan closing a total length of 310 Km of road and 13 No. Bridges have been completed satisfactorily out of a planned length 387 km of road and 19 bridges.

Out of the 12 LCB contracts awarded, 8 contracts were completed satisfactorily without many problems before the extended loan closing date. Four of the LCB contracts could not be completed before the loan closing date. These contracts are not yet completed at the time this Implementation Completion Report is been prepared. This is very unfortunate since the burden of completing these contracts have now fallen into the hands of the Sri Lanka Government which is already experiencing a lot of difficulties in maintaining its road network properly due to shortage of funds.

Of the 4 ICB contracts awarded, one was completed satisfactorily ahead of schedule. A second contract was completed with several months extension. A third was completed after the contractor was awarded a negotiated settlement and a lengthy extension of time. This contract dragged on for over 3 1/2 years beyond the originally stipulated date for contract completion. The 4<sup>th</sup> contract was not completed and it had to be terminated as the engineer certified default of the contractor and the contractor failed to convince the employer of his ability to proceed with the work with due diligence despite providing an opportunity for him to do so,

Unfortunately the two contracts that proved most troublesome were both awarded to contractors of the same country (Italy) and it so happened that the persons involved in both contracts were the same even under two different company names. It is to be stated that the award of the 4<sup>th</sup> ICB contract to this contractor was not recommended by the Technical Evaluation Committee or the Tender Board. However due to the strict Bank guidelines this had to be awarded despite the fact that the rates quoted were far below Engineer's estimate.

The work on the 4<sup>th</sup> ICB contract was severely delayed and the contractor could not complete the work. This contractor could do only 22% of the physical work during the whole of the contract period. He had a valid extension for a period of 55 days given by the engineer. Contractor disputed certain decisions of the engineer and requested for an amicable settlement with the employer. The discussions that followed did not come to a satisfactory conclusion resulting in the employer having no alternative but to terminate the contract. This was a complete disaster for the government as the loan period also had ended by this time. The government thus got saddled with a multiple problem of; i.) having to implement the balance works on the contract; ii) having to maintain the existing road that was badly neglected by the contractor during the period it was in his possession; iii) having got to find funds from the government budget to implement these works as the contractor has brought in an injunction to prevent encashment of the performance bond and the advance payment bond.

Despite the bad performance by a few of the contractors the project had some positive results in the way of satisfactorily completing 310 km of road rehabilitation and 13 bridges at a total cost of around Rs. 3.20 Billion.

Loan funds were not fully utilized at the time of the loan closing. Total expenditure incurred on Civil works at the time of loan closing is Rs. 3.22 Billion of this expenditure a total of Rs. 2.16 Billion has been paid from the loan. The balance payments have been made by the Sri Lanka Government. The component of the payments made by the Government is thus 35%, which is very much higher than the proportion 22 % stipulated to be met by the Government in the loan agreement. This is very unfortunate particularly because at the time of loan closing a substantial amount of funds were remaining unutilized.

## **PROJECT MANAGEMENT AND MONITORING UNIT**

The loan agreement provided for the establishment of a Project Management and Monitoring Unit (PMMU) in the RDA to enable the activities of the project to be coordinated so that implementation of these are carried out according to a cost effective programme. This unit was staffed by an internationally recruited management adviser and two senior engineers nominated by RDA.

The provision for the services of the adviser was available only for two years, and with an extension of one year the services of the international adviser ended in April 1995. Thereafter the function of the PMMU was carried out by the RDA staff. The assistance of a local engineer was also obtained as a consultant for a limited period in order to assist in the preparation of the project quarterly report, the financial forecast of which is prepared using an excel based computer programme.

Even though the functioning of the unit faltered with the departure of the International adviser, it improved subsequently and carried out the functions satisfactorily.

## **STUDIES UNDERTAKEN**

One component of the project was to carry out three separate studies, as follows:

1. Road User Charges
2. Domestic Road Contracting Industry
3. Road Materials Design and Construction Standards.

All these studies have been satisfactorily completed. Road user charges Study was carried out by the Transport Sector Planning Centre (TSPC) assisted by a Consultant Mr. P. Aldridge. This work has been completed in October 1992.

The Domestic Contracting Industry Study has been carried out by the Institute for Construction Training and Development (ICTAD). This study has been completed in September 1992 with the submission of the final report.

The Road Materials, Design and Construction Standards Study has been carried out inhouse with the assistance of three International Consultants fielded by Renardet S.A. The study with the International Consultants ended in August 1996. Incorporation of the findings and recommendations of this study into RDA use is been done by RDA. Following documents have already been issued in this respect.

1. Geometric Design Standard of Road
2. Bridge Design Manual
3. Bridge Construction Manual
4. Bridge Maintenance Manual

Issue of the following Documents is pending.

1. Inventory of Road Construction Materials, Manual of Unified Set of Standards
2. Amendments to Standards Specifications for Road Construction and Maintenance for Roads and Bridges (1989) - Pavement section

## **IMPLEMENTATION AND OPERATION EXPERIENCE**

Substantial delays were encountered in implementing some of the contracts. In most instances these are attributed to contractors poor performance due to slow mobilization and not providing the necessary funds to meet the costs to be incurred at the site, due to contractors financial difficulties.

In some instances contractors failed to find correct type of local materials in the near vicinity of the project works. Due to their reluctance to resource materials from further interior locations the contractors failed to perform these items of work, and instead sought for alternative, not so superior, methods of construction and reduced specifications. These activities contributed to the delays considerably in these contracts.

Problems encountered at metal quarries caused delays in several contracts. The extended time period required to obtain all the necessary approvals for quarry license and blasting material permits necessitated the contractors to seek alternative sources for these materials in the open market. Finding good quality materials in these instances was not easy and sometime contractors had to bring materials from fairly long distances.

Under the project the structural strength of the road and the riding quality of its surface was substantially improved thereby making these sections of road much safer and reduced vehicle operating cost. An economic analysis conducted on the completed sections of road has shown that the economic rate of return is acceptable varying from 14.4% and 53.0%. Thus the project objective of reduced operational cost has been achieved.

In several contracts the contractors were subjected to recovery of liquidated damages. We feel the contractors in general should have managed the contracts more effectively and kept as close as possible to the original schedules. The consultants on the other hand should have assisted the contractors in completing the works in time. Strained relationships between the contractor and the consultants were noticed in some instances. These have contributed to the delay to some extent.

## **PROJECT SUSTAINABILITY**

A total of 310 km of road and 13 No bridges were completed and these were handed over to the Maintenance Management and Construction Division of RDA, which division is responsible for the maintenance of these facilities. Funds for maintenance are separately provided annually under the maintenance budget.

Maintenance funds generally get distributed on a provincial basis and within the province according to the need of the situation. Mostly, damage to roads occurs during the rainy season and priority is given to maintain the damaged areas. In addition sand sealing of the carriageway surface is carried out generally according to a programme. Thus the road network coming under the purview of the RDA is fairly well looked after.

## **PROJECT COVENANTS**

The loan has specified certain Financial Covenants to be adhered to by the borrower and on behalf of the Government, Road Development Authority (RDA) has fully complied with these requirements.

Proper record of all financial transactions and payments has been maintained in accordance with sound accounting practices. All accounts have been annually audited by the Government General Audit and these reports have been submitted to the Bank in accordance with the stipulated covenants. The report

for the year ending 31.12.1997 has been submitted to the Bank in August 1998. All accounting records have been made available to the bank missions.

### **INSTITUTIONAL DEVELOPMENT**

A Project Management and Monitoring unit (PMMU) was established in the RDA with an international consultant as its Team Leader and assisted by two senior engineers from the RDA. The International Consultant served for a period of 3 years and thereafter the Management Functions were taken over by the RDA engineers. They performed this task quite satisfactorily. However the problems encountered with some of the contracts towards the latter part of the project were beyond their capacity to resolve, as these problems were centered round the poor performance of the contractors.

The purchase of two computers for the PMMU helped some of the engineers to become conversant in the application of computer programs for project work.

The various documents produced under the three studies will prove to be very useful for the engineers in the organization.

### **CONCLUSION**

The loan period ended on 31.12.1998 after an extension of 6 months period, from the original loan closing date. However the project work were not fully completed by this time. Some contracts are still continuing and some contractors have notified of their intention to go for arbitration. As such the activities of the project are still far from concluded. As the Bank has closed the loan, all future expenses will have to be met by the Government. This will no doubt be a great financial burden on the Government of Sri Lanka.

The Bank has greatly assisted and supported the project with regular review missions, each time giving good advice and encouragement to the project staff. The Government of Sri Lanka and RDA, the implementing agency is very much thankful to the very valuable service rendered and the corporation provided by the IDA, the Consultants, Contractors and all other Agencies, Organization and Individuals who participated in the implementation of this project.

**ANNEX 1 - PROJECT COSTS**Project Costs  
(all in million SRs.)

Item	<u>Local Cost</u>	<u>Foreign Cost</u>	<u>Total Cost</u>
Roads	1,022	2,047	3,069
Bridges	115	130	245
Flood Rehabilitation	10	35	45
Equipment	2.26	4.20	6.46
Technical Assistance	10.9	330.0	340.9

## ANNEX 2 - RDA OPERATIONAL PLAN FOR MAINTENANCE

The completed roads and bridges handed over to the Maintenance Division of RDA will become the responsibility of that division for maintenance. In order to satisfactorily accomplish this, RDA is provided with an annual budget for road maintenance. The details of the allocations and the expenditure made over the part years from 1993 to 1999 and the anticipated allocations for year 2000 to 2004 are as indicated below:

### Maintenance Allocations for 1993 to 1999 - Routine Maintenance

<u>Year</u>	<u>Maintenance Allocation SLR(Mil)</u>	<u>Expenditure SLR (Mil)</u>	<u>Expenditure US\$(Million)</u>	<u>Length Of Roads Km</u>
1993	195.85	189.56	3.95	10960
1994	198.08	161.10	3.29	11076
1995	208.31	204.42	3.99	11076
1996	278.19	243.71	4.41	11152
1997	279.56	276.04	4.68	11152
1998	278.57	265.39	3.93	11152
1999	315.31	-	-	11152

### Maintenance Allocation from 1993 to 1999 - Periodic Maintenance

<u>Year</u>	<u>Allocation SLR (Mil)</u>	<u>Expenditure SLR(Mil)</u>	<u>Length Sand Seal (km)</u>	<u>Length DBST/SBST (km)</u>	<u>Length AC overlay (km)</u>
1993	370	-	-	-	-
1994	473	411	-	-	-
1995	800	781	4528	138	-
1996	930	689	1720	155	25
1997	700	600	1629	130	-
1998	800	727	3104	111	-
1999	700	-	-	-	-

Expenditure figures for periodic maintenance have been estimated from partial provincial data.

**ANTICIPATED MAINTENANCE FROM 2000 TO 2004**

<i>Year</i>	Anticipated Allocation for <b>Routine Maintenance SLRs (million)</b>	Anticipated Allocation for <b>Periodic Maintenance SLRs (million)</b>
<i>2000</i>	401.4	800.
<i>2001</i>	401.4	800
<i>2002</i>	401.4	900
<i>2003</i>	401.4	1000
<i>2004</i>	401.4	1000

**SRI LANKA**  
**THIRD ROADS PROJECT**  
**(CR. 2183-CE)**

**ECONOMIC EVALUATION**  
**ROADS DEVELOPMENT AUTHORITY**

**ANNEX C**

**ECONOMIC EVALUATION FOR IMPLEMENTATION OF THIRD ROADS**  
**REHABILITATION PROJECT**

**1.1 Method**

The economic evaluations were carried out for 17 road links under the Third Roads Project in line with the methodology applied in the project appraisal for the feasibility study. This methodology uses the HDM model (Highway Design Model) developed by the World Bank. HDM version III has been used. The inputs for each road section include the length, width, structural number, latest measured roughness, the opening year after rehabilitation was completed, opening-year traffic volumes by vehicle type, estimated traffic growth rates for each of the three periods over the assumed 20 year life of the rehabilitated projects, and actual economic costs of road rehabilitation and maintenance.

The model itself contains estimates of vehicle operating costs by type of vehicle and formulae for ascertaining the relationships between road roughness and vehicle operating costs; the progression of road roughness and its variation with time and traffic volumes for each road classification; the timing of periodic maintenance depending on road strength, traffic volumes and the time since the construction or last overlay; the reduction in roughness following rehabilitation or overlay; the calculation of the volume of “generated” traffic, and calculation of the benefits to generated traffic based on half of the unit cost saving to “normal” traffic. The development of the input data and formulas, and the values adopted, are described in the other section.

The analysis system calculates the vehicle operating costs for each vehicle type, and in total for each year of a 20-year period following the opening of a particular road after the completion of the rehabilitation of the road. It then calculates the corresponding costs as they would be without the rehabilitation project, the resulting vehicle operating costs savings, and the benefits to generated traffic. It also calculates the routine, recurrent and periodic maintenance cost in each year both with and without the project. These annual benefits and costs of the rehabilitation, are used to compute an Economic Rate of Return for each of project segment.

**1.2 Construction and Maintenance Costs**

The actual financial costs for rehabilitation of each road and the associated bridges, and the tax and duty content of the costs, are shown in the report submitted by the engineering consultant, Scott Wilson, UK. The economic costs of construction used in this economic evaluation are based on the actual cost incurred (see Table C-1), with the financial costs converted into economic costs by removal of the estimated taxes and duties. The timing of the project and distribution of the costs by year, are the cashflow of the project.

### **1.3 Result of the Evaluation**

An example of the detailed output for one of the road links is shown in Table C-2. The results of the evaluation in terms of Economic Rates of Return (ERRs) using these input data are shown in Table C-3. The rates of return ranging from 21% to 125% indicating that the completed rehabilitation projects are economically feasible.

### **1.4 Additional Data**

Summary results of road roughness data are provided in Table C-4. These data are based on a 1996 road condition survey and cover the entire country, with the exception of the North-East Province. Summary figures on RDA maintenance expenditures are given in Table C-5.

## World Bank Third Roads Project Actual Financial Cost by Road Link

Project ID	Name of Road Link	Day Works	General	Earthworks	Drainage	Road Works	Incidental Cons. and Road Furniture	Total
WB3/2 (a)	1. Thoppu-Dankotuwa-Giriulla Road	472,779.80	25,995,921.30	22,650,147.20	22,818,754.00	128,756,950.31	504,620.00	201,199,172.61
WB3/2 (b)	2. Katunayake-Veyangoda-Nittabuwa Road	325,098.22	17,848,131.10	13,604,515.26	12,256,624.34	94,267,492.05	22,910.00	138,324,770.97
WB3/2 (c)	3. Seeduwa - Udugampola Road	81,146.00	4,454,976.70	4,246,370.43	7,906,368.84	17,838,213.82	1,250.00	34,528,325.79
WB3/2 (d)	4. Biyanwila - Ganemulla Road	105,525.00	5,793,400.82	2,964,331.26	14,061,435.43	21,976,942.81	3,390.00	44,905,025.32
WB3/2	5. Negombo Town Road	83,960.00	4,610,952.90	1,740,846.87	8,574,363.68	20,722,180.29	0.00	35,732,303.74
WB3/2 (e)	5.1 St. Joseph Street	37,568.54	2,063,206.04	778,955.21	3,836,664.43	9,272,297.62	0.00	15,988,691.84
WB3/2 (f)	5.2 Old Chilaw Road	17,930.44	984,711.98	371,774.08	1,831,135.29	4,425,414.77	0.00	7,630,966.56
WB3/2 (g)	5.3 Main Street	28,461.02	1,563,034.88	590,117.58	2,906,563.96	7,024,467.89	0.00	12,112,645.34
WB3/4	6. Matara-Hambantota & Tangalle - Beliatta Rd		48,202,185.14	47,894,779.32	207,366,904.82	201,814,778.85	17,381,191.65	522,659,839.78
WB3/4(a)	6.1 Matara - Hamabantota		43,951,075.98	43,670,781.29	189,078,535.80	184,016,070.07	15,848,287.22	476,564,750.36
WB3/4(a)	6.2 Tangalle Belliatta Road		4,251,109.16	4,223,998.03	18,288,369.02	17,798,708.78	1,532,904.43	46,095,089.42
WB3/5A(a)	7. Peliyagoda - Kadawatha Road	607,190.80	11,122,129.76	6,808,184.35	13,991,377.50	116,770,622.90	3,413,653.50	152,713,158.81
WB3/5A(b)	8. Hendala - Hunupitiya Road	158,120.70	2,896,355.00	2,113,633.95	9,879,433.00	24,243,643.22	525,477.50	39,816,663.37
WB3/5A(c)	9. Wattala - Mahara Road	219,201.30	4,015,186.50	3,443,690.30	15,056,282.00	31,722,909.90	738,560.00	55,195,830.00
WB3/5A(d)	10. Kiridiwita - Ganemulla Road	59,539.14	1,087,315.00	1,093,674.65	1,583,274.50	11,050,324.45	71,710.00	14,945,837.74
WB3/5B(a)	11. Kaduwela - Hanwella Road	640,571.50	8,952,748.91	3,557,529.16	28,555,980.20	84,671,507.76	8,042,997.50	134,421,335.03
WB3/5B(b)	12. Dehiwela - Maharagama Road	273,148.73	3,817,307.26	830,026.45	16,748,056.97	38,080,159.00	5,043,482.50	64,792,180.91
WB3/5B(c)	13. Katubedda - Piliyandala Road	148,949.00	2,081,595.78	1,560,239.42	10,256,213.40	18,514,892.23	2,777,957.18	35,339,847.01
WB3/5B(d)	14. Nawinna - Mirihana Road	191,564.00	2,677,774.86	1,033,957.73	13,986,588.45	24,174,985.10	3,372,262.70	45,437,132.84
<b>Total</b>								<b>1,520,011,423.92</b>

TABLE C-1

**ECONOMIC EVALUATION**

**SUB-PROJECT N I-4 RC**

Proposed Surface: AC(R/W)

ROAD Katunayake - Veyangoda - Nittambuwa

Traffic growth rate, years 1-7 (% per yr.)	5.00%																		
Traffic growth rate, years 8-14 (% per yr.)	4.00%																		
Traffic growth rate, years 15-20 (% per yr.)	3.00%																		
Opening year	1997																		
Roughness in 1997, mm/km, w/out project	6194																		
Roughness in 1997, mm/km, with project	2800	Est.	1997	Traffic, VPD															
Length (km.)	24.3																		
Width (km.)	6.7	VOC,	1997	W/out project (Rs/1000 km)															
Economic rehab. cost (Rs. mill.)		VOC,	1997	With project (Rs/1000 km)															
	Year 1																		
	Year 2																		
	Year 3																		
	Year 4																		

Year	Vehicle Operating Cost Without Project (Rs. million)						Vehicle Operating Cost With Project (Rs. million)						VOC Saving	Benefit from Generated Traffic	Maint. Cost "W/out"	Rehab. & Maint. Cost "With"	Net Benefit	
	Car 4WD Pickup	Small & Med. Bus	Large Bus	Light Truck	Heavy Truck	Total	Car 4WD Pickup	Small & Med. Bus	Large Bus	Light Truck	Heavy Truck	Total						
1																	11.07	-11.07
2																	11.07	-11.07
3																	22.13	-11.91
4																	66.40	-61.25
5	65.08	104.31	53.36	65.76	31.02	319.53	58.12	80.72	48.75	56.87	28.49	272.94	46.59	1.36	5.15	3.16	49.93	
6	70.39	116.75	61.90	75.43	36.64	361.11	61.02	84.76	51.19	59.71	29.92	286.59	74.52	3.08	5.15	3.16	79.58	
7	78.22	137.75	77.32	92.60	47.03	432.92	64.58	90.53	53.63	62.91	31.21	302.86	130.06	7.81	5.15	3.97	139.06	
8	82.13	144.64	81.18	97.23	49.38	454.57	68.33	96.67	56.18	66.29	32.56	320.04	134.53	7.96	5.15	8.15	139.50	
9	86.24	151.87	85.24	102.09	51.85	477.30	72.30	103.20	58.86	69.85	33.97	338.18	139.12	8.11	14.86	14.86	147.23	
10	90.55	159.47	89.50	107.19	54.44	501.16	74.17	103.02	62.22	72.58	36.36	348.35	152.81	9.32	5.15	3.16	164.11	
11	95.08	167.44	93.98	112.55	57.17	526.22	78.49	110.04	65.18	76.47	37.94	368.13	158.09	9.50	5.15	3.97	168.77	
12	98.88	174.14	97.74	117.06	59.45	547.27	82.27	116.38	67.64	79.81	39.20	385.30	161.97	9.59	5.15	3.16	173.54	
13	102.84	181.10	101.65	121.74	61.83	569.16	86.22	123.06	70.18	83.29	40.51	403.26	165.90	9.67	5.15	19.85	160.87	
14	106.95	188.35	105.71	126.61	64.30	591.93	87.61	121.68	73.49	85.72	42.95	411.44	180.48	11.01	5.15	3.16	193.47	
15	111.23	195.88	109.94	131.67	66.88	615.60	91.82	128.73	76.25	89.46	44.38	430.66	184.95	11.11	14.86	3.97	206.95	
16	115.68	203.72	114.34	136.94	69.55	640.23	96.24	136.15	79.13	93.37	45.86	450.75	189.48	11.22	5.15	3.16	202.68	
17	120.31	211.87	118.91	142.42	72.33	665.84	100.86	143.96	82.11	97.44	47.39	471.76	194.08	11.31	5.15	14.86	195.67	
18	125.12	220.34	123.67	148.11	75.23	692.47	102.49	142.35	85.97	100.28	50.25	481.33	211.14	12.88	5.15	8.15	221.02	
19	128.87	226.95	127.38	152.56	77.48	713.24	106.39	149.15	88.35	103.65	51.42	498.96	214.28	12.88	5.15	3.97	228.33	
20	132.74	233.76	131.20	157.13	79.81	734.64	110.43	156.23	90.79	107.14	52.63	517.22	217.42	12.87	5.15	3.16	232.27	
21	136.72	240.77	135.14	161.85	82.20	756.68	114.62	163.60	93.31	110.74	53.85	536.13	220.55	12.86	14.86	14.86	233.41	
22	140.82	248.00	139.19	166.70	84.67	779.38	115.35	160.22	96.76	112.87	56.55	541.74	237.64	14.49	5.15	3.16	254.11	
23	145.05	255.44	143.37	171.70	87.21	802.76	119.74	167.87	99.44	116.66	57.88	561.59	241.17	14.49	5.15	8.95	251.86	
													3254.77	191.50	137.20	241.54	3347.09	

Disc. @ 10% p.a.:	PV, Total Benefits (Rs. mill.) =	1294.86	B/C Ratio =	11.49	NPV (Rs. mill.) =	1165.18
Disc. @ 12% p.a.:	PV, Total Benefits (Rs. mill.) =	1105.42	B/C Ratio =	10.89	NPV (Rs. mill.) =	990.87

IRR = 61.0%

All values discounted to beginning of Year 1, defined as first year in which a project expenditure is made.  
All costs are at 1998 constant prices

## ERR SUMMARY BY ROAD LINK

SAR Proj No.	RDA Proj No.	Road Link	SAR		Contract		SAR data				Revised Analysis		Opening Year AADT compared to				Length (km)	Cost of Completion (Rs 000's)	Cost per km (Rs 000's)		
			ID #	km	pkg #	km	original	complete	Base data		Future estimate		RDA, May 1999		SAR Base					SAR Estimate	
								AADT (Dec 89)	rough (mm/km)	AADT (end open yr)	ERR	AADT	ERR	abs chg	% chg	abs chg	% chg				
						% comp 31MAR99	T3.1	T3.1	T4.1												
GROUP 1 (designed before start of project)																					
1.1 A. C. OVERLAYS (AC)																					
I-1 AC		Moratuwa - Kalutara	1	28.0	3/1			7,303	4,000	9,241	48.8%										
I-2 AC	I-1 AC	Kalutara - Ambalangoda (km 46-85)	2	40.0	3/1	92.0	100%	92.0	2,678	3,900	3,197	20.5%						92.00			
I-3 AC	I-2 AC	Ambalangoda - Galle (km 86-119)	3	33.0	3/1			3,644	3,700	4,471	23.5%										
1.2 REGULATING COURSE (RC)																					
I-4 RC	I-3 RCAC	Katunayake - Veyangoda - Nittambuwa	4	26.0	3/2			2,299	5,200	2,908	34.4%	3,080	61.0%	781	34.0%	172	5.9%	24.34	138,324.8	5,683.0	
I-5 RC	I-4 RCAC	Toppu - Dankotuwa - Giriulla	5	32.0	3/2	76.1	99%	75.3	1,966	5,000	2,487	36.5%	2,635	38.3%	669	34.0%	148	6.0%	31.92	201,199.2	6,303.2
I-6 RC	I-5 RCAC	Biyarwila - Ganemulla	6	8.6	3/2			1,609	5,500	2,036	39.2%	6,964	40.1%	5,355	332.8%	4,928	242.0%	4.58	44,905.0	9,804.6	
I-7 RC	I-6 RCAC	Seeduwa - Udugampola	7	12.0	3/2			1,064	5,250	1,346	28.8%	1,426	44.8%	362	34.0%	80	5.9%	8.76	34,528.3	3,941.6	
I-8 RC		Matara - Hakmana	8	24.0	3/3			2,374	5,400	3,007	38.2%		requested								
GROUP 2 (designed after start of project)																					
2.1 A. C. OVERLAYS (AC)																					
II-1 AC		Galle - Matara	9	44.0	3/3	88.0	14%	12.3	1,906	4,500	2,415	21.2%		requested							
II-2 AC	II-1 AC	Kaduwela - Hanwella	10	12.5	3/5B			2,782	5,830	3,662	33.7%	4,295	20.9%	1,513	54.4%	633	17.3%	14.20	134,421.3	9,466.3	
II-3 AC	II-2 AC	Peliyagoda - Kadawatha	11	8.0	3/5A			22,861	4,000	30,083	65.9%	32,168	65.9%	9,307	40.7%	2,085	6.9%	8.04	152,713.2	18,994.2	
II-4 AC	II-3 AC	Dehiwela - Maharagama (B)	12	7.6	3/5B			3,662	5,800	4,819	36.0%	5,154	55.7%	1,492	40.7%	335	7.0%	7.53	64,792.2	8,604.5	
II-5 AC	II-4 AC	St. Joseph Street (B)	13	2.8	3/2			7,138	6,300	9,031	98.1%	9,566	124.5%	2,428	34.0%	535	5.9%	2.64	15,988.7	6,056.3	
II-6 AC	II-5 AC	Navinna - Mirihana Road	14	3.4	3/5B			2,896	6,300	3,811	30.9%	4,074	29.0%	1,178	40.7%	263	6.9%	3.39	45,437.1	13,403.3	
II-7 AC	II-6 AC	Hunupitiya-Wattala-Hendala (B)	15	4.0	3/5A			3,570	5,350	4,698	33.5%	5,023	37.7%	1,453	40.7%	325	6.9%	3.60	39,816.7	11,060.2	
II-8 AC		(Old) Chillaw Road, Negombo	16	1.3	3/2			5,740	5,350	7,263	86.4%	7,692	105.1%	1,952	34.0%	429	5.9%	1.26	7,631.0	6,056.3	
II-9 AC	II-7 AC	Katubedda - Piliyandala Road (B)	17	4.7	3/5B	26.0	99%	25.7	2,301	6,300	3,028	30.7%	3,238	29.8%	937	40.7%	210	6.9%	4.35	35,339.8	8,124.1
2.2 REGULATING COURSE (RC)																					
II-10 RC	II-8 RCAC	Matara - Dickwella (km 163-183)	18	21.0	3/4			1,595	5,200	2,020	30.2%										
II-11 RC	II-9 RCAC	Dickwella - Hambantota (km 183-241)	19	59.0	3/4	83.1	100%	83.1	1,347	5,200	1,706	26.4%	2,356	63.7%	1,009	74.9%	650	38.1%	84.02	476,564.8	5,672.0
II-12 RC	II-10 RCAC	Matara - Akuressa	20	21.0	3/3			1,072	5,200	1,358	23.0%		requested								
II-13 RC	II-11 RCAC	Wattala - Mahara Road (B)	21	7.2	3/5A			1,594	5,970	2,097	25.4%	2,242	51.7%	648	40.7%	145	6.9%	7.05	55,195.8	7,829.2	
II-14 RC	II-12 RCAC	Negombo - Giriulla (Main Street)	22	1.6	3/2			2,082	5,200	2,634	41.7%	2,791	53.5%	709	34.1%	157	6.0%	2.00	12,112.6	6,056.3	
		no 15																			
II-16 RC	II-13 RCAC	Beliatta - Tangalla	23	6.5	3/4			814	5,200	1,031	21.9%	1,203	37.0%	389	47.8%	172	16.7%	7.41	46,095.1	6,220.7	
II-17 RC	II-14 RCAC	Kirindiwita - Ganemulla	24	3.0	3/5A	21.3	100%	21.3	1,120	5,200	1,474	22.4%	1,576	49.9%	456	40.7%	102	6.9%	2.63	14,945.8	5,682.8
II-18 RC	dropped	Isurupaya - Pannipitiya	25	6.0	3/5			1,747	5,700	2,299	37.3%		dropped								
TOTAL				417.2		386.5	309.8	87,164		112,122		95,483		30,638				309.72	1,520,011.4		
TOTAL, IDA completed links only								64,845		84,114		95,483	52%	30,638	47.2%	11,369	13.5%	217.72	1,520,011.4	6,981.5	

TABLE - C3

### NOTES & SOURCES:

SAR - Staff Appraisal Report, 03 October, 1990.  
Economic Analysis - Road Development Authority, May 1999.

## Average Roughness of National Road Network

Based on 1996 Road Survey

Province	District	Length (km)	Roughness									Total		
			"A"	"B"	total	Class A			Class B			0-5	5-7	>7
						0-5	5-7	>7	0-5	5-7	>7	0-5	5-7	>7
Western	Colombo	1	135.02	248.78	383.80	90.32	17.83	27.46	8.48	89.33	151.76	98.80	107.16	179.22
	Gampaha	2	129.69	578.42	708.11	54.35	24.05	51.87	17.18	257.63	307.10	71.53	281.68	358.97
	Kalutara	3	80.49	297.13	377.62	40.83	0.00	40.34	9.65	43.44	244.04	50.48	43.44	284.38
	provincial sub-total		345.20	1,124.33	1,469.53	185.50	41.88	119.67	35.31	390.40	702.90	220.81	432.28	822.57
	provincial distribution		23%	77%	100%	53%	12%	34%	3%	35%	62%	15%	29%	56%
Central	Kandy	4	183.67	524.66	708.33	17.70	56.01	109.83	2.41	25.53	497.74	20.11	81.54	607.57
	Matale	5	105.18	263.47	368.65	98.15	0.00	7.03	0.00	0.38	263.47	98.15	0.38	270.50
	Nuwara Eliya	6	119.72	480.32	600.04	0.00	0.00	119.72	2.41	80.19	401.91	2.41	80.19	521.63
	provincial sub-total		408.57	1,268.45	1,677.02	115.85	56.01	236.58	4.82	106.10	1,163.12	120.67	162.11	1,399.70
	provincial distribution		24%	76%	100%	28%	14%	58%	0%	8%	91%	7%	10%	83%
Southern	Galle	7	102.92	365.24	468.16	76.83	6.36	19.70	0.00	0.00	366.17	76.83	6.36	385.87
	Matara	8	134.52	223.57	358.09	0.00	46.02	92.37	0.00	31.84	192.73	0.00	77.86	285.10
	Hambantota	9	115.47	271.17	386.64	0.00	0.43	115.04	0.00	40.23	230.94	0.00	40.66	345.98
	provincial sub-total		352.91	859.98	1,212.89	76.83	52.81	227.11	0.00	72.07	789.84	76.83	124.88	1,016.95
	provincial distribution		29%	71%	100%	22%	15%	64%	0%	8%	92%	6%	10%	83%
North/East (N)	Jaffna	10												
North/East (E)	Batticaloa	13												
NWP	Kurunegala	16	197.14	590.49	787.63	92.53	2.41	135.19	0.00	75.19	513.83	92.53	77.60	649.02
	Puttalam	17	156.08	324.20	480.28	0.00	86.97	69.11	55.69	39.70	228.71	55.69	126.67	297.82
	provincial sub-total		353.22	914.69	1,267.91	92.53	89.38	204.30	55.69	114.89	742.54	148.22	204.27	946.84
	provincial distribution		28%	72%	100%	24%	23%	53%	6%	13%	81%	11%	16%	73%
NCP	Anuradhapura	18	351.82	381.97	733.79	73.26	166.46	109.63	0.00	0.00	381.97	73.26	166.46	491.60
	Polonnaruwa	19	142.52	179.91	322.43	59.41		83.11	47.33	33.74	97.94	106.74	33.74	181.05
	provincial sub-total		494.34	561.88	1,056.22	132.67	166.46	192.74	47.33	33.74	479.91	180.00	200.20	672.65
	provincial distribution		47%	53%	100%	27%	34%	39%	8%	6%	86%	17%	19%	64%
Uva	Bandarawela	20	264.23	418.56	682.79	23.80	36.34	205.70	0.00	203.53	216.76	23.80	239.87	422.46
	Monaragala	21	204.29	138.23	342.52	0.00	4.15	194.67	0.00	0.00	138.23	0.00	4.15	332.90
	provincial sub-total		468.52	556.79	1,025.31	23.80	40.49	400.37	0.00	203.53	354.99	23.80	244.02	755.36
	provincial distribution		46%	54%	100%	5%	9%	86%	0%	36%	64%	2%	24%	74%
Sabaragamuwa	Ratnapura	22	271.69	391.65	663.34	38.05	92.86	140.68	0.00	41.19	354.62	38.05	134.05	495.30
	Kegalla	23	143.88	248.77	392.65	118.02	26.14	25.23	0.00	50.46	197.46	118.02	76.60	222.69
	provincial sub-total		415.57	640.42	1,055.99	156.07	119.00	165.91	0.00	91.65	552.08	156.07	210.65	717.99
	provincial distribution		39%	61%	100%	35%	27%	38%	0%	14%	86%	14%	19%	66%
National Total			2,838.33	5,926.54	8,764.87	783.25	566.03	1,546.68	143.15	1,012.38	4,785.38	926.40	1,578.41	6,332.06
National Distribution			32%	68%	100%	27%	20%	53%	2%	17%	81%	10%	18%	72%

### Notes & Sources

Received from Sri Lanka Road Development Authority (RDA), 20 May 1999.

### Summary of RDA Maintenance Expenditures

Type	1994			1995			1996			1997			1998			Total (1994-98)			Average (1994-98)		
	Budget (Rs mn)	Actual (Rs mn)	Length (km)																		
Routine maintenance	171	154	8,585	180	153	8,625	258	221	8,719	263	235	8,755	260	233	8,833	1,132	996	43,517	226	199	8,703
Periodic maintenance	338	294		795	776		740	548		865	741		998	907		3,736	3,266		747	653	
sand sealing			880			3,011			2,046			1,780			2,945			10,662			2,132
DBST/SBST			20			32			58			123			72			305			61
ratio of actual to budget		87%			98%			74%			86%			91%			87%			87%	
Periodic maintenance (from Borrower's Report)	473			800			930			700			800								
<i>Estimated actual</i>		411			781			689			600			727							
Flood damage	334	277	222	165	119	152	108	126	186	173	158	131	151	124	137	931	804	828	186	161	166
Rehabilitation	486	356	394	534	438	387	766	506	418	387	374	401	607	476	681	2,780	2,150	2,281	556	430	456

#### NOTES & SOURCES

Source: Road Development Authority, Maintenance Division, May 1999, except box showing "Borrowers Report".  
 Figures compiled by summing up Provincial level data, except that Southern Province is EXCLUDED from these data.

**SRI LANKA**  
**THIRD ROADS PROJECT**  
**(CR. 2183-CE)**

**MAP**

**ANNEX D**

