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**Report No.: 17218**

**IMPLEMENTATION COMPLETION REPORT**

**LAO PEOPLE'S DEMOCRATIC REPUBLIC**

**HIGHWAY IMPROVEMENT PROJECT**  
**(CREDIT 2218-LA)**

**DECEMBER 1, 1997**

Transport Sector Unit  
East Asia and Pacific Region

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### CURRENCY EQUIVALENTS

Currency Unit	=	Kip
US\$ 1.0	=	Kip 711 (Jan.1992)
		Kip 726 (Oct. 1994)
		Kip 925 (Sept. 1995)
		Kip 944 (Jan. 1997)
		Kip 1080 (June 1997)

### WEIGHTS AND MEASURES

Metric	=	US System
1 meter (m)	=	3.2808 feet (ft)
1 square meter (m2)	=	10.764 square feet (sq.ft)
1 kilometer (km)	=	0.6214 mile (mi)
1 square kilometer (km2)	=	0.3861 square mile (sq.mi)

### GOVERNMENT FISCAL YEAR

October 1 - September 30

### ACRONYMS AND ABBREVIATIONS

DCA	=	Development Credit Agreement
DCTPC	=	Department of Communication, Transport, Post and Construction
ERR	=	Economic Rate of Return
HIP	=	Highway Improvement Project
ICB	=	International Competitive Bidding
ICR	=	Implementation Completion Report
IDA	=	International Development Association
MCTPC	=	Ministry of Communication, Transport, Post and Construction
MOF	=	Ministry of Finance
NDF	=	Nordic Development Fund
NPV	=	Net Present Value
NTS	=	National Transport Study
PCU	=	Project Coordination Unit
RAD	=	Road Administration Division
RBMS	=	Road and Bridge Maintenance Societies
RMMD	=	Road Maintenance and Management Division
RUC	=	Road User Charges
SAR	=	Staff Appraisal Report
SHIP	=	Second Highway Improvement Project
STP	=	Southern Transport Project
TA	=	Technical Assistance
THIP	=	Third Highway Improvement Project
TPU	=	Transport Planning Unit
UNDP	=	United Nations Development Program
VOC	=	Vehicle Operating Costs

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**IMPLEMENTATION COMPLETION REPORT**

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(CREDIT 2218-LA)**

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## **IMPLEMENTATION COMPLETION REPORT (ICR)**

### **LAO PEOPLE'S DEMOCRATIC REPUBLIC (PDR)**

#### **HIGHWAY IMPROVEMENT PROJECT (CREDIT 2218-LA)**

#### **PREFACE**

This is the Implementation Completion Report (ICR) for the Highway Improvement Project (HIP) in Lao PDR for which Credit 2218-LA in the amount of SDR 32.10 million (US\$45 million equivalent) was approved on May 22, 1991, and made effective on July 19, 1991.

The credit was closed on June 30, 1997, as originally scheduled. It was fully disbursed and the final disbursement took place on September 30, 1997. Co-financing for the project was provided by the Nordic Development Fund (NDF) in an amount of SDR 4.0 million (US\$5 million equivalent).

The ICR was prepared by Subhash Seth, Consultant Highway Engineer (AFTT1), and reviewed by Denis Robitaille, Task Manager (EASTR), and Jeffrey Gutman, Sector Manager, Transport Sector Unit (EASTR). The Borrower and the co-financier provided comments that are available in the project files.

Preparation of the ICR was initiated during IDA's final supervision/completion mission conducted in May 1997. It is based on material in the project files. The Borrower contributed to preparation of the ICR by preparing its own evaluation of the project's execution and initial preparation, and commenting on the draft ICR. The co-financier, NDF, provided its comments on the draft ICR and also carried out an evaluation of its financed components. Both documents, comments on the draft ICR and the NDF evaluation report dated November 1996, are available in the project files.

**IMPLEMENTATION COMPLETION REPORT (ICR)****LAO PEOPLE'S DEMOCRATIC REPUBLIC (PDR)****HIGHWAY IMPROVEMENT PROJECT  
(CREDIT 2218-LA)****Evaluation Summary****Introduction**

1. Lao PDR is a poor, landlocked, mountainous and sparsely-populated country (4.9 million in 1995). Its level of economic and social development is among the lowest in the world, with a per capita income of US\$350 per year (1995). Much of the country's basic infrastructure has been destroyed by wars and lack of consistent maintenance, resulting in poor physical integration of the country's 16 provinces. IDA began its involvement in the transport sector of Lao PDR in 1987, with the financing of the Southern Transport Project (STP). The STP carried out major repairs and maintenance of National Route 13 South (NR 13S) in traversing three provinces, and strengthened the maintenance capacity of the three provincial state-owned Road and Bridge Maintenance Societies (RBMS). The STP substantially achieved its overall objectives and the credit was closed as scheduled on December 31, 1994. The Highway Improvement Project (HIP), second in the series of projects intended to consolidate efforts initiated in STP, focused on: (a) rehabilitating priority sections of the country's crucial north-south transport artery; (b) building a capacity to restore the badly deteriorated road network; and (c) strengthening transport planning, maintenance management and institutional building of the Ministry of Communication, Transport, Post and Construction (MCTPC).

**Project Objectives and Description**

2. The project's overall goal was to support the key subsector goal of the Government's Third Five-Year Development Plan (1991-95) to increase the efficiency of the country's road network. To attain this goal, the project's objectives were to rehabilitate a priority section of the main north-south road artery and to restore road capacity lost through years of war and neglect. To achieve these objectives the project comprised the following components: (a) rehabilitation of a 266km section of the Namkading-Savannakhet road, including the replacement of six bridges and rehabilitation of 40 bridges; (b) restoration of road capacity through implementation of emergency spot improvements on critical road sections by force account maintenance units, provision of maintenance equipment and technical assistance (TA) services for works supervision, on-the-job training and completion of a road maintenance study; (c) TA services for project coordination and implementation, and transport planning; and (d) training for MCTPC staff.

3. The project's objectives were appropriate, realistic, and relevant for the transport sector of Lao PDR and consistent with the Government's strategy. The strategy included restoration of vital links of the transport network and provision of improved transport services. The project aimed to contribute to the completion of the country's most important road link.

### **Implementation Experience and Results**

4. The project successfully achieved its principal objectives. It helped reduce vehicle operating costs, provide access to social services, and facilitate export/import and transit traffic: all conducive to economic growth. The project's first objective of rehabilitating a priority section of the main north-south road artery was partly yet satisfactorily achieved. Out of the scheduled 266 km of national roads to be rehabilitated to a bituminous surface, 212.5 km were completed satisfactorily using the credit proceeds (para 24). The restoration of the road capacity, the second objective, was carried out within the originally established targets despite delays in the procurement of heavy maintenance equipment. Emergency repairs to key sections of the network were carried out while a sound basis for the development of an effective maintenance capability was established. The institutional strengthening component was mostly achieved. The performance of TA in project coordination and in road maintenance management was satisfactory while TA effectiveness in transport planning was partly successful. The financially minor training component, comprising fellowships and short-term courses, was partly successful. The long-term program comprising fellowships was carried out favorably while seminar short-term courses for MCTPC staff were carried out but substantially delayed for about three years.

6. The project encountered cost increases during the rehabilitation of the Namkading-Savannakhet Road, mainly due to: higher ICB bids than expected (+US\$6.2 million), essential engineering design modifications (US\$9.9 million), and approved additional works (US\$3.5 million). Because the credit proceeds were insufficient to cover these cost increases, the Government requested IDA to use funds from the ongoing Second Highway Improvement Project (SHIP). IDA management agreed with the Government's proposal since SHIP is a continuation of HIP and shares its key objectives, including the rehabilitation of selected sections of RN 13S. Consequently, the SHIP Development Credit Agreement (DCA) was amended on February 29, 1996, to reallocate SDR 9 million from its existing categories of expenditure to a newly-created category to cover costs corresponding to the rehabilitation of about 70 km of RN 13S between Namkading and Savannakhet.

7. The benefits derived from the completion of the road rehabilitation are substantial. They include travel time reduction (from two days to five hours), transportation cost savings, and road safety enhancement. Further, the long-term sustainability of the physical works is likely since the Government has shown a strong commitment to planning and implementation of its road maintenance program which both SHIP and the Third Highway Improvement Project (THIP) contributed to. IDA performance was

satisfactory in identification and preparation phases. During project implementation, the IDA-Borrower relationship was positive and productive, and as a result two follow-on projects, SHIP and THIP, are currently under implementation. Further, IDA performance in supervision was satisfactory in both quantity and quality. The Borrower demonstrated a strong commitment to the preparation and implementation of the project, and the project was completed by its originally scheduled closing date June 30, 1997.

8. Given the successful implementation results of the project's components, the overall assessment of the project outcome is rated satisfactory. The final ERR of 23% of the road rehabilitation component is about 6% higher than the appraisal estimates despite cost overruns and a reduced benefit period of 1.5 years (para 32). The average daily traffic measured in May 1997 is 1517 vehicles (839 motorcycles, 121 three wheels motorcycles, 303 light vehicles, 178 trucks and 69 buses) is far above the appraisal estimate. MCTPC has made the necessary arrangements--including technical planning and budgetary provisions--for carrying out maintenance of completed roads, assisted by the IDA-financed two follow-on projects.

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

#### **9. Key lessons learned:**

- a) Careful attention must be paid to detailed engineering design and to realistic cost estimates.
- b) For an efficient and effective maintenance management system, the planning, budgeting implementation and evaluation must be integrated, and responsibilities clearly defined for MCTPC headquarters and for regional offices, provincial and district level administrations.
- c) To increase the effectiveness of technical assistance assignments and the transfer of skills to local nationals, consultants should prepare and implement a Skill Transfer Action Plan, and the Government should assign appropriate counterpart staff at the beginning of the project and avoid turnover.
- d) Considering the local institutional constraints, the development of a modern and efficient maintenance organization will take much longer than normally anticipated, therefore expectations under any individual project must be realistic.

## **IMPLEMENTATION COMPLETION REPORT (ICR)**

### **LAO PEOPLE'S DEMOCRATIC REPUBLIC (PDR) HIGHWAY IMPROVEMENT PROJECT (CREDIT 2218-LA)**

#### **PART 1: PROJECT IMPLEMENTATION ASSESSMENT**

##### **A. Statement/Evaluation of Objectives**

###### **Background**

1. Lao People's Democratic Republic (Lao PDR) is a poor, landlocked, mountainous and sparsely populated (4.9 million in 1995) country. Its level of economic and social development is among the lowest in the world, with a per capita income of US\$350 per year (1995). Much of the country's basic infrastructure has been destroyed by wars and lack of regular maintenance, resulting in poor physical integration of the country's 16 provinces. Agriculture activities generate 54% of the country's GDP and employ 80% of the labor force. There is currently no railway. Road transport is the major mode of internal communication, carrying about 90% of the total freight ton-km and 85% of total passenger-km. River transport carries about 10% of both freight ton-km and passenger-km. Domestic air freight is negligible while air transport carries only 5% of passenger-km. The highway network connects the main provincial centers, however, the quality of roads is extremely poor and many key road sections are impassable during the rainy season.
2. IDA's involvement in the transport sector of Lao PDR began in 1987, with the financing of the Southern Transport Project (STP). The STP aimed to carry out major repairs and maintenance of NR 13S in traversing three provinces, and to strengthen the maintenance capacity of the three provincial state-owned Road and Bridge Maintenance Societies (RBMS). The STP substantially achieved its overall objectives and the Highway Improvement Project (HIP) was second in a series of projects aimed at supporting the key subsector goal of increasing the efficiency of the country's road network.

###### **Statement of Objectives**

3. The objective of HIP as stated in the February 1991 Staff Appraisal Report (SAR) was to support the key subsector goal in the Government's Development Plan of that time, i.e., to increase the efficiency of the country's road network through the rehabilitation of a priority section of the main north-south road artery and the restoration of the road capacity lost through years of war and neglect. The project's road rehabilitation component was specifically aimed to contribute to the rehabilitation of the most important road link in the country. Under the project road restoration component, emergency spot improvements were carried out on key road sections to address short-term transport needs, and for the longer term a study was carried out for the establishment of an effective countrywide maintenance organization.

4. To achieve these objectives the project consisted of the following components:

- a) rehabilitation and bituminous surfacing of a 233-km section of NR 13S between Namkading and Seno, including the rehabilitation of 40 bridges and replacement of six bridges near collapse, and the 33-km section of NR 9 from Seno to Savannakhet.
- b) restoration of road capacity through the procurement of road maintenance equipment, materials and supplies for emergency spot improvements to be carried out by maintenance brigades, and the provision of TA to recommend a long-range road maintenance strategy and to develop a medium-term maintenance program (NDF-financed).
- c) technical assistance to MCTPC for project implementation (NDF-financed) and transport planning; and
- d) degree courses and short-term training for MCTPC staff.

### **Evaluation of Objectives**

5. All project objectives were appropriate, realistic, and relevant for the transport sector of Lao PDR. The objectives were consistent with the Government's strategy which included restoration of vital links of the transport network and provision of improved transport services. The objective of reducing overall transport costs was consistent with the IDA country assistance strategy for the development of the transport sector. The project placed emphasis on the following: (a) provision of a basic all-weather road network linking the various provinces to the capital to allow for the channeling of food production from surplus areas to deficit areas, (b) rehabilitation and construction of access roads, and (c) strengthening of road maintenance capabilities of central and provincial maintenance organizations. The project also addressed the shortage of trained manpower by providing scholarships for national staff to study economics and engineering abroad, and laid the foundation for the establishment of a systematic approach to maintenance planning and implementation.

6. The project's objectives and its components, carefully tailored to the country's needs, did not require major revisions during the course of their implementation; however, the road rehabilitation component was modified slightly in the following respects:

- a) The length of road rehabilitated using the credit proceeds is 212.5 km compared to the appraisal estimate of 266 km. Two ICB contracts initiated under the project resulted in rehabilitating 276.5<sup>1</sup> km divided as follows: Namkading to Thakhek under contract-I; and 124.44 km from Thakhek to Savannakhet under contract-II. The construction of the total length, 276.5 km, was completed in April 1997. However, because of insufficient funds under the credit, only 212.5 km were financed under HIP and the remaining 64 km were financed using funds of the ongoing Second Highway Improvement Project (SHIP) (para 24).
- b) In the original design it was proposed to construct the shoulders with sub-base material. However, the only sub-base material available on site was non-permeable

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<sup>1</sup> Original 266 km plus Thakhet bypass section and another section of RN 13S which was not originally scheduled for rehabilitation but was located within the project limits and severely damaged.

and unsuitable. Consequently, it was agreed to follow road engineer experts' advice to use base course material for the shoulders. This design modification, which brought about a cost increase, ensured proper drainage essential for long-term viability of the structure.

- c) For safety reasons the bridges' width was increased from the proposed 6.5 meters to 7 meters.
- d) For safety reasons, a bypass of the town Thakhek was constructed to direct traffic away from the center of town.
- e) The minimum size of concrete pipes was increased from 0.6 to 1.0 meter to improve the road's drainage system.

## B. Achievement of Objectives

7. The project design was appropriate for achieving all agreed objectives, though some objectives were substantially achieved while others were partially achieved. An overview of the achievement of objectives is presented below under the following headings: (i) physical objectives, (ii) institutional development, (iii) sector policies, (iv) macroeconomic policies, (v) private sector development, (vi) environmental objectives, and (vii) social objectives. Other objectives, namely, financial objectives, public sector management, gender concerns and poverty reduction, were not applicable under the project.

### Physical Objectives

8. *Road Rehabilitation:* National Road 13, the spine of the National Route system, links Luang Prabhang in the north with Khong in the south and passes through the major urban areas of Vientiane, Bolikhamsai, Khammouane, Savannakhet, Saravane and Champassak provinces. Recognizing the importance of this road the Government decided to undertake an improvement program in segments. The segment Namkading-Savannakhet was selected for improvement under HIP since its existing condition was grossly inadequate to cope with growing traffic demands.

9. Its rehabilitation was partly yet satisfactorily achieved. The total length rehabilitated and improved to all-weather bituminous standards under the two ICB contracts was 212.5 km, compared to the 266 km appraisal estimate (para 6a). On the project road, there were 46 one-lane temporary steel bridges in poor condition, and six near collapse. Reconstruction of these six dilapidated bridges to permanent, high-level, two-lane structures with adequate protection and cross-drainage was a substantial achievement under contract-I. The quality of these works observed during the ICR mission was satisfactory. The road is now passable throughout the year and travel time from Namkading to Savannakhet has been substantially reduced from two days to five hours.

10. The planned emergency repairs to the remaining 40 bridges were excluded from the project since the Japanese International Cooperation Agency (JICA) agreed to the Government's request to finance their reconstruction with similar standards used for the six rehabilitated bridges under the project. Final completion of these bridges is expected by the end of 1998.

11. While the road rehabilitation works were in progress, the restoration of road capacity component succeeded to keep traffic running smoothly on NR 13S. Although there were significant delays in the procurement of new equipment needed for the restoration of the road capacity component (para 26), old equipment of state enterprises was used to keep this component progressing in the interim, and the output of the maintenance works carried out by the two brigades was found satisfactory.

#### **Institutional Development Objectives**

12. The institutional development objectives were mostly achieved since all planned activities were not as successful as expected. A brief description of various institutional activities covered under the sub-component of TA and training is given below:

13. *Technical Assistance:* TA to MCTPC for project implementation and the development of a road maintenance capacity was effective. NDF-financed *TA for project implementation* was satisfactory by contributing to smooth coordination, planning, and monitoring of project activities, procuring project inputs and services, and carrying out project reporting and accounting. The performance of the PCU was especially beneficial to the project in terms of design modification, problem identification, and recommendations of remedial measures both to the MCTPC and IDA. NDF-financed *TA for road maintenance* was also effective. Its main activities consisted of a maintenance study and a spot improvement program. The maintenance study provided both a nationwide picture of the road and road transport situation prevailing at the time as well as a sound basis for the planning and policy system to be used for future works of the Road Administration Division (RAD), previously the Road Maintenance and Management Division (RMMD). It has developed a program for spot improvement on select roads with the objective of rendering all national roads passable for traffic throughout the year by the turn of the century. The program, with appropriate revisions, has been used for implementation since the issue of the final report on the maintenance study in October 1993. Further, the maintenance study has contributed to the successful reorganization of the RMMD to the current RAD. The spot improvement program implementation contributed to essential improvements of the main roads and an increase in the capability of both MCTPC staff and the local maintenance units and contractors. TA in this field also helped establish standard contract procedures for small works. *TA for transport planning* was less successful. The HIP provided a good framework for formulating policy, transport planning and programming. However, benefits were limited by a lack of absorptive capacity.

14. *Training:* Training activities designed to alleviate the critical shortage of trained staff in all areas were agreed upon during negotiations. It comprised both long-term bachelor's degree courses abroad for seven staff members (five in engineering, two in economics) as well as short-term training courses and seminars. The long-term fellowships program was immediately implemented. After receiving language training, in 1993, the students began their studies in Thailand and are scheduled to complete their degrees in 1998. As the funds in question were small, IDA and the Government agreed to finance the portion of the fellowship program executed after the project closing date with SHIP funds. Out of seven students only one abandoned for personal reasons. All agreed by contracts to exclusivity of their services to MCTPC at the end of their studies. The short-term training program results were not as encouraging as expected on account of the Ministry's of Finance (MOF) reluctance to use credit proceeds to finance the training program for MCTPC staff, developed with SIDA assistance and the Manpower

Organization Development Division of the MCTPC. It was only in 1996, after heavy persuasion by IDA missions and MCTPC, that MOF ultimately authorized expenditures incurred for the training program.

15. The overall project rating is satisfactory as adequate progress has been achieved under all project components except the marginal short-term training component.

### **Sector Policies**

16. *Transport Planning Unit:* The HIP provided a good framework for formulating policy, transport planning and programming, determining priority investment needs, defining a detailed investment and maintenance program for the Third Five-Year Development Plan (1991-95), and outlining the Fourth Five-Year Development Plan (1996-2000). The project intended to strengthen the institutional capacity of the MCTPC in transport planning to ensure the system procedures recommended by the NTS before the start of the HIP could be tested, refined and consolidated. The project succeeded to upgrade the NTS unit to Transport Planning Unit (TPU), however, transport planning was found to be less effective mainly due to a lack of absorptive capacity.

### **Macroeconomic Policies**

17. A credit covenant required the Government to implement road user charges (RUCs) which are satisfactory to IDA. Accordingly, during the project period the Government increased the RUCs, which are currently sufficient to cover the maintenance cost of its network. However, an increasing share of vehicles and fuel sales escape taxes. In addition, the Government experiences difficulties collecting all revenues due to a lack of resources in the Customs and Taxation Department of MOF.

### **Private Sector Development**

18. The maintenance study provided very useful recommendations for private sector development as follows: (a) to design appropriate strategies and privatization procedures for road maintenance works; and (b) to improve payment procedures for contractors, suppliers, and consultants. IDA has been integral in advising and assisting MCTPC to establish flexible local contracting procedures until overall strategies for private sector involvement to develop the local road construction industry are agreed upon and implemented. Currently, MCTPC shows a complete commitment to privatization, reflected in its policy to privatize all state-owned enterprises in the road sub-sector by end-1997. In addition, for FY97/98, the Government intends to use competitive bidding for all construction and routine and periodic maintenance works.

### **Environmental Objectives**

19. Given that the road rehabilitation and maintenance works were carried out within the existing road rights-of-way, the project had no significant negative environmental or ecological impacts. National guidelines to reduce environmental effects of the road construction were applied under the project.

## **Other Social Objectives**

20. MCTPC requested that IDA agree to a realignment of the project road to serve as a bypass to the city of Thakhek. The new alignment required displacement of 15 residences. The residents favored the realignment since their land would become more valuable once on a frontage on the bypass. The residents signed memorandums of understanding with the provincial Governor's office regarding the relocation and the new road's right-of-way. MCTPC compensated the land owners according to IDA resettlement guidelines.

### **C. Major Factors Affecting the Project**

21. *Factors not Generally Subject to Government Control:* (a) higher bids than expected under the two major ICB contracts, (b) working season for construction of roads and bridges limited to the months of October to May, and (c) flooding associated with unusual rainy seasons.

22. *Factors Generally Subject to Government Control:* Due to budget constraints, the Government did not succeed to provide its counterpart funds for the maintenance activities as agreed. However, during FY94/95 and FY95/96, the government increased its allocation by 50%.

23. *Factors Generally Subject to Implementing Agency Control:* (a) slow authorization of expenditures for the agreed short-term training program by MOF; (b) delay in paying the 5% share of the advance payment to the contractor, one reason for the contractor's slow progress; and (c) lack of qualified staff resulting in a low transfer of skills from TA services.

24. *Cost Changes:* The project encountered cost increases under the rehabilitation of the Namkading-Savannakhet road component. The increases were mainly due to higher ICB bids than expected (+US\$6.2 million), essential engineering design modifications (US\$9.9 million), and approved additional works (US\$3.5 million). Because the credit proceeds were insufficient to cover these cost increases, the Government requested IDA to use funds from the ongoing Second Highway Improvement Project (SHIP). IDA management agreed with the Government's proposal since SHIP is a continuation of HIP and shares its key objectives, including the rehabilitation of selected sections of RN 13S. Consequently, SHIP Development Credit Agreement (DCA) was amended on February 29, 1996, to reallocate SDR 9 million from its existing categories of expenditure to a newly-created category to cover costs corresponding to the rehabilitation of about 70 km of RN 13S between Namkading and Savannakhet.

25. *Implementation Delays:* The road rehabilitation components under contracts I and II were delayed about nine months and 19 months, respectively. The main reason for these delays was improper site management on the part of the contractor, which resulted in a shortage of technical staff, low production of crushed materials, and lack of construction equipment. Progress was slow at the start, gained momentum in the middle, became slow again and improved markedly at the close. The repeated follow-up by the IDA supervision missions with MCTPC, consultants and contractors contributed significantly to completion of the road rehabilitation works by the credit closing date and saved the project from further delays. Otherwise, the country would have incurred more costs, namely, through the loss of the important economic benefits generated by the improvement of the road. Furthermore, the contractor encountered unexpected difficulties in the execution of a foundation for bridge number 20 for which the

completion date was extended to March 1997. To solve the foundation problems, MCTPC, the contractor and IDA agreed to build bridge number 20 with a new design based on 1.5-meter handymen bored piles, and since the revised design cost US\$1.46 million compared to the original cost of US\$2.2 million, the revised design proved more economical. This new design was carried out under a lump sum contract.

26. The restoration of the capacity component was delayed by the late arrival of NDF-financed road maintenance equipment. This component consisted of four sub-components: (a) procurement of road maintenance equipment, material and supplies for emergency spot improvements to be carried out by two maintenance brigades; (b) provision of technical assistance for supervision of the brigades; (c) implementation of the maintenance study recommending a long-term road maintenance strategy and development of a medium-term maintenance program. The procurement of the road maintenance equipment was delayed by Nordic suppliers' failure to respond to tenders on a timely basis. The Government proposed ICB, but since NDF funds are only eligible for Nordic Competitive Bidding, NDF could not accept such proposal. According to NDF's General Procurement Guidelines, additional proposals were thus solicited from Nordic suppliers. Meanwhile, spot improvement works were carried out using existing state enterprises and old equipment. However, the NDF-financed sub-component of the maintenance study was well-executed, well-timed, and provided sound bases for the preparation of a maintenance program under HIP and the institutional development component of SHIP.

27. The implementation of the TA component was also delayed about ten months. The first contracts for the recruitment of one project coordinator and two senior highway engineers for the restoration of road capacity component, scheduled for October 1991, actually was awarded in August 1992. The program of short-term training courses and seminars for MCTPC staff was substantially delayed for about three years, since the MOF was reluctant to authorize the necessary expenditures.

#### D. Project Sustainability

28. The benefits derived from the completion of the road rehabilitation of the NR 13 from Namkading to Savannakhet are substantial. They include reduced travel time, reduced transportation costs, and enhanced road safety. In addition, the long-term sustainability of physical works is likely since the Government continues to show strong commitment to the planning and implementation of the road maintenance program under SHIP and THIP. The TA was intended to strengthen the maintenance management; however, the organization and management of maintenance activities still is not fully adequate for three main reasons. *First*, a lack of qualified and experienced staff has constrained the development of an efficient road maintenance management system. As a consequence, budgeting, planning, contracting, and supervising functions are still rudimentary. *Second*, the Government had not ranked maintenance activities as high priority in the past, as reflected in the low-level funding. *Third*, the local construction industry is constrained by a lack of adequate and modern equipment, funds and qualified staff. However, these limiting factors were well known during project preparation; therefore, it was already recognized that results will take much longer than normally expected.

29. RAD was established during HIP and assigned to the communication department of MCTPC to manage the maintenance of the national network. Recently MCTPC has readjusted its position and provided RAD with the responsibility to plan, budget, monitor and set standards,

leaving the contracting and supervision responsibilities to the provincial Departments of Communication Transport, Post and Construction (DCTPC). Despite a lack of sufficient financial, technical and institutional resources to carry out maintenance tasks, all maintenance organization levels have experienced improvement over the last five years. The Lao Government, the Bank and other development partners have recognized the need for an improved maintenance management system, and foreign and local funding has substantially increased the maintenance budget in recent years. As the improvement of transport infrastructures has become the Government's top priority, MCTPC, DCTPC, with Bank and NDF participation through the implementation of THIP, is expected to improve its maintenance management system; therefore, the sustainability of the project can be rated as likely.

#### **E. Association Performance**

30. **Identification:** The Government first inquired about the possibility of obtaining IDA assistance to finance construction of the Namkading-Savannakhet road in 1981. Feasibility and detailed design studies for the road were carried out at that time by consultants managed by IDA under UNDP financing. However, by the time the studies were almost complete, the security situation in the project area deteriorated and IDA decided that further pursuit of the project was not feasible. The Government continued to express interest in constructing the road and in 1988, when the conditions in the area improved, the original feasibility studies were updated by consultants financed under the previous IDA-supported STP. The project design was consistent with the Government's development priorities and IDA's assistance strategy for the country. The selected stretch on NR 13S was integral to the country's economic development, passing through the heart of the country linking north to south. IDA's performance in project identification was satisfactory since it focused on the country's need and on a well-integrated program for road upgrading, modernization, rehabilitation and maintenance.

31. **Preparation:** Consultants financed by STP prepared the detailed engineering design and bidding documents, and carried out the prequalification exercise for civil works under contracts I and II. Tender documents, including detailed specifications for the road maintenance equipment to be provided under HIP, were also prepared by the STP-financed consultants. IDA performance during project preparation, particularly while dealing with the Government, NDF, and the consultants, was satisfactory in its ability to provide a good framework for preparing detailed costs, a financing plan, and implementation arrangements for all project components.

32. **Appraisal:** The Bank thoroughly reviewed the project reports prepared by consultants during the appraisal stage, and adequately estimated project costs and the implementation period, though both estimates were modified substantially for the civil works component. During the appraisal mission the cost of the project road was estimated at US\$43.374 million, excluding contingencies, but prior to negotiations the project team decided to reduce the cost to US\$32.929 million, excluding contingencies, based on international price adjustment factors applicable at that time. The cost adjustment did not take place, and as a result, the project faced a serious financial gap, for which the Government requested IDA management to supply additional financing (para 20). The component of road capacity was appropriately designed to provide for equipment, technical assistance and operating costs necessary to carry out spot improvement works. Due to the scattered type of work, a physical target could not be agreed upon prior to negotiations. It was indicated clearly in the SAR (para 3.18) that the two RMBSS would be responsible for about 150 km of spot improvement works per year, which would be selected on the basis of technical experts' recommendations during project implementation. The appraisal

team correctly recognized the three key risks: (a) weak implementation capacity, (b) inadequate maintenance management, and (c) delay in road rehabilitation works implementation caused by foreign contractors' inexperience in working in Lao PDR. All three risks were appropriately minimized by designing a TA component comprising the following: (a) appointment of a consultant to coordinate project activities; (b) provision of equipment, technical and operational support to carry out spot improvement works and a maintenance program; and (c) selection of consultants, from the consultant team that designed the project road, to supervise the road rehabilitation component. No specific indicators to monitor and evaluate the project performance were designed since no such practice existed at that time. However, the agreed physical targets for the civil works at appraisal were found adequate to assess the project performance and to evaluate the impact of project objectives. Overall, the Bank's performance in the appraisal of all project components can be rated as satisfactory.

33. **Supervision:** The Bank supervision was professional, objective, and based on a solid understanding of the Borrower's institutional capabilities and the Bank's policies and procedures. During project implementation, the Bank-Borrower relationship was effective and productive. Progress of project implementation was reported adequately. The implementation problems were identified correctly, assessed adequately and were reported appropriately in the performance ratings of supervision form 590. Most of the credit covenants were enforced and remedies exercised. Sufficient advice was given to the implementing agencies and responses were more than adequate. The timing of supervision missions was appropriate and the time spent in the field was sufficient. On the whole the Bank's performance in supervision was satisfactory in both quality and quantity on account of the following key reasons:

- a) Progress of each major civil contract was very slow on account of mismanagement by the contractor. All IDA supervision missions, in conjunction with the MCTPC, detailed and reviewed the achievements, assessed key problems, and agreed to time-based action plans for the next steps, failing which it would have not been possible to complete both contracts by the credit closing date.
- b) Though MOF failed to authorize the expenditures for the training program at the beginning, the supervision missions were instrumental in convincing MOF of the benefits of this program, and it ultimately received MOF approval.
- c) Since the project was the first large contract in Lao PDR, IDA was required to review several design changes in the structures of the road pavement and bridges.

34. IDA has been quick to discuss matters with other Bank specialists and provided all the needed technical and legal advice on time to MCTPC. The FY97 project supervision by IDA was recently rated highly satisfactory by the Quality Assurance Group (QAG).

#### F. Borrower Performance

35. **Preparation:** The project's main components of road rehabilitation and restoration of road capacity were prepared with the support of consultants. Despite institutional weakness and low proficiency with Bank procedures, overall, Borrower performance in reviewing the project proposal's technical, economical and implementation arrangements was satisfactory. The Borrower identified the project objectives, consistent with the Government's transport development objectives as expressed in the Second Five-Year Development Plan (1986-90),

which included restoration of vital sections of the transport network and provision of the improved transport services. The Borrower demonstrated a strong commitment to the preparation of the TA and training components, particularly to the establishment of a project coordinating unit, strengthening of the RBMS maintenance management, and the need to remedy the shortage of technical manpower--all consistent with the MCTPC needs at that time.

**36. Implementation:** MCTPC, with TA from Project Coordination Unit (PCU), was responsible for overall project implementation; however, day-to-day management of the rehabilitation of NR 13S was assigned to the Project Management Unit (PMU), established at Namkading, while day-to-day management of the road capacity restoration component was the responsibility of the head of the Road Administration Division (RAD), formerly the Road Maintenance and Management Division (RMMD). The PCU, based in Vientiane, was responsible for coordinating, planning, and monitoring project activities; procuring project inputs and services; organizing project-supported training; and carrying out project reporting and accounting. The performance of the PCU was very beneficial to the project in terms of design modification, problem identification, and recommendations of remedial measures both to the MCTPC and IDA. However, the short-term training program was not effective due to substantial delays in MOF approval of the training program. However, the Government's counterpart funding was timely and the implementing agencies showed adequate commitment to complying with the major credit covenants. The Borrower complied with IDA procurement and disbursement guidelines, and an audit was carried out in accordance with the National Auditing guidelines, which were found acceptable to IDA. Overall, the Borrower performance during implementation can be rated as satisfactory.

#### G. Assessment of Outcome

**37.** The project achieved the majority of its objectives despite delays and cost increases (Table 1). Other than significantly reducing transportation costs on the Namkading - Savannakhet section, the rehabilitation works implemented under the project also greatly contributed to good-riding quality and reduced travel time (para 8). The quality of civil works, in general, was satisfactory. The road restoration capacity helped to implement spot improvement programs and to keep traffic running smoothly on several important road sections. The outcome of the Maintenance Study proved very beneficial in identifying road investment opportunities and updating road inventories. Given the satisfactory outcomes of the civil works component and institutional development program, the overall assessment of the project outcome is rated satisfactory.

**38. Economic Reevaluation:** Table 9 summarizes the economic reevaluation and sensitivity analysis performed for the road rehabilitation component. Based on final construction costs and most probable estimates of annually recurring maintenance costs and periodic intervention costs, investments made on three sections of the project road produced ERRs of 23%, 17% and 34%, compared with earlier estimates of 17%, 18% and 30%, respectively. The road rehabilitation component shows an overall ERR of 23%, compared with the appraisal estimate of 17%. The computed ERRs underestimate the full benefits of the project as they do not include benefits created by increased traffic safety, quality of service, savings in travel time and convenience to road users on the improved facilities--all substantial outcomes of the road project rehabilitation program. The average daily traffic measured in May 97 is 1517 vehicles (839 motorcycles, 121 three wheels motorcycles, 303 light vehicles, 178 trucks and 69 buses) is far above the appraisal

estimate of about 400 vehicles. The existing traffic levels, obtained through traffic count surveys and projected traffic growth rates provided in the consultant's report, have been taken into account for the computation of benefits. The main benefit of the road improvement considered in the analysis is the savings in vehicle operating costs (VOC). The unit VOC savings were computed using "with project" and "without project" scenarios with HDM Manager at 1997 prices. The analysis period is through 2015, extending the benefit period over 18.5 years beginning June 1997, compared with the 20-year period considered at appraisal. The final ERR upon project completion of 23% is satisfactory and is, in fact, about 6% higher than the appraisal estimates. Ultimate beneficiaries of the completed projects are the road users who come from a wide range of sectors and income groups.

## **H. Future Operations**

39. Since the majority of the civil works covered under HIP included road rehabilitation, spot improvement and deferred maintenance on existing national and provincial roads, no formal plan of operation was established. However, to ensure routine and periodic maintenance of the improved roads, MCTPC is currently implementing the two IDA-financed SHIP and THIP, which include, among others, substantial components on road maintenance and capacity building. The road maintenance component under THIP includes: (i) a slice of the four-year periodic maintenance program which includes about 600 km of high priority roads; (ii) a four-year program of incremental routine maintenance of the core network to be financed by the local budget, and (iii) TA for the organization and management of MCTPC's road maintenance program. This also would include measures to develop and sustain the capabilities of MCTPC and its regional and provincial organizations (RAD, DCTPCs) to plan, budget, implement, and supervise road maintenance works, enhance the use of a Bridge Management System and implement a simple Pavement Management System. Given that MCTPC has made necessary arrangements, including technical planning and budgetary provisions, to carry out the road maintenance of completed roads, and IDA has two follow-on projects, there is no need for a specific future plan of operation for HIP.

40. Basic performance indicators needed for the operational phase of the project, including an international roughness index, classified traffic counts, road condition surveys, axle-load surveys, computerized analysis of road accidents, would be monitored by MCTPC to serve the following purposes: (a) preparation of a maintenance program, (b) improvement of road safety, and (c) lowering VOC. Given that MCTPC, with the support of THIP, would have adequate technical, financial, and institutional arrangements, future operations of the project are expected to be efficient and effective. This would not preclude a follow-up of the maintenance program for all the HIP project roads by IDA future supervision missions under its on-going SHIP and THIP.

## **I. Key Lessons Learned**

41. The key lessons learned from the implementation experience of the HIP are as follows:

- a) Careful attention must be paid to project design, realistic cost estimates, and adequate and timely budget allocations for counterpart funding.

- b) For an efficient and effective maintenance management system, planning, budgeting, implementation and evaluation must be integrated and responsibilities clearly defined by MCTPC headquarters down to regional offices, provincial and district level administrations.
- c) To increase the effectiveness of technical assistance assignments and the transfer of skills to local nationals, consultants should prepare and implement a Skill Transfer Action Plan and Government should assign appropriate counterpart staff at the beginning of the project and avoid turnover.
- d) Considering the local institutional constraints, the development of a modern and efficient maintenance organization will take much longer than normally anticipated, therefore expectations under any individual project must be realistic.

**PART II**  
**Statistical Information**

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**Table 1: Summary of Assessments**

<u>A. 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"/>	<input checked="" type="checkbox"/>
Sector Policies	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Financial Objectives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Institutional Development	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical Objectives	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Poverty Reduction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Gender Issues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other Social Objectives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Environmental Objectives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Public Sector Management	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Private Sector Development	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<u>B. Project Sustainability</u>	<u>Likely</u>	<u>Unlikely</u>	<u>Uncertain</u>	
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<u>C. Bank Performance</u>	<u>Highly satisfactory</u>	<u>Satisfactory</u>	<u>Deficient</u>	
Identification	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Preparation Assistance	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Appraisal	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Supervision	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<u>D. Borrower Performance</u>	<u>Highly satisfactory</u>	<u>Satisfactory</u>	<u>Deficient</u>	
Preparation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Implementation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Covenant Compliance	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<u>E. Assessment of Outcome</u>	<u>Highly satisfactory</u>	<u>Satisfactory</u>	<u>Unsatisfactory</u>	<u>Highly unsatisfactory</u>
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Table 2: Related Bank Loans/Credits**

Loan/Credit Title	Purpose	Year of Approval	Status
<i>Preceding operations</i>			
1. Southern Transport Project (Credit 1846-LA)	To: (a)carry out repairs and maintenance of Highway 13 in the provinces of Savanakhet, Saravanne and Champassak; (b)strengthen maintenance capacity of the three provincial Road and Bridge Maintenance Societies; and (c) complete studies for future transport development	1987	Completed in 1994
<i>Following Operations</i>			
1. Upland Agriculture Development Project (credit 2079-LA)	Support a) upland crop production, b) rehabilitation of existing irrigation schemes, c) feeder road rehabilitation and maintenance, and d) technical assistance and training for institutional strengthening.	1990	Ongoing
2. Luang Namtha Project (Credit 2579-LA)	Support of rural infrastructure including roads, water supply, and institutional strengthening of provincial planning and management	1994	Ongoing
3. Second Highway Improvement Project (Credit 2606-LA)	Increase efficiency of Laos road network through road improvements and strengthening institutional capabilities to plan, maintain etc.	1994	Ongoing
4. Third Highway Improvement Project (Credit 2943-LA)	To: (a)reduce transport costs through the upgrading of a southern leg of Road No. 13 and the construction of Road no. A-1; (b)improve institutional capacity and effectiveness in managing construction and maintenance activities at the central and provincial levels; and (c) introduce routine and periodic maintenance of roads by contract using competitive bidding procedures.	1997	Ongoing

**Table 3: Project Timetable**

<b>Steps in Project Cycle</b>	<b>Date Planned</b>	<b>Date Actual</b>
Identification	December 1988	December 1988
Preparation	August 1989	October 22-29, 1989
Appraisal	February 4-11, 1990	May 27- June 7, 1990
Negotiations	January 1991	Jan 14-16, 1991
Board Presentation	March 1991	March 21, 1991
Signing	May 22, 1991	May 22, 1991
Effectiveness	July 1991	October 7, 1991
Project Completion	December 31, 1996	April 30, 1997
Credit Closing	June 30, 1997	June 30, 1997

**Table 4: Cumulative Credit Disbursements: Estimated and Actual  
(US\$ million)**

	FY92	FY93	FY94	FY95	FY96	FY97	FY97
Appraisal Estimates	5.4	15.8	24.8	32.9	40.5	45.0	45.0
Actual	6.4	9.4	17.2	25.9	41.3	46.21	46.22*
Actual as % of loan amount	14	21	38	58	92	103	103*

Final disbursement on September 16, 1997

\*Higher than Loan amount due to favorable exchange rate between SDR and US\$ during project life.

**Table 5: Key Indicators for Project Implementation**

		Estimated	Actual
I	Key Implementation Indicator in SAR/President's Report		
	Not Applicable		
II	Modified Indicators		
	Not Applicable		
III	Other Indicators		
	1. Rehabilitation of Road	266 km	212.5 km
	2. Rehabilitation of Bridges	40	40*
	3. Replacement of Bridges	6	6
	4. Fellowship and Short-term training courses	7	6**

\* During project implementation, JICA agreed to finance the complete rehabilitation of the 40 bridges planned to receive maintenance repairs under the project.

\*\* Out of seven selected for long-term bachelor's degree courses, one abandoned for personal reasons. Currently, four are still studying in Thailand and are expected to complete their studies in 1998.

**Table 6: Key Indicators for Project Operation**

I. Key Operating Indicators in SAR/President's Report	Estimated	Actual
Not Applicable		

**Table 7: Studies Included in Project**

Study	Purpose as defined at appraisal/redefined	Status	Impact of study
Road Maintenance Study	<p>1. To recommend a policy and a long-range strategy for efficient and cost effective road maintenance;</p> <p>2. To assess the long-term maintenance needs and the financial requirements; and</p> <p>3. To prepare a detailed proposal for the implementation of the Maintenance Fund proposed by the National Transport Study.</p>	Study commenced on 02/23/93 and was completed in 09/93.	<p>The study has been very useful in developing maintenance strategy, and provided for the following:</p> <ol style="list-style-type: none"> <li>1. an essential tool, i.e., a planning and policy system for the RAD for the future economic work and technical planning of the maintenance activities on the Lao road network;</li> <li>2. a basis for formulation of the maintenance programs for the follow on project to be financed by IDA and other donor agencies;</li> <li>3. an action plan for establishment of a maintenance fund for financing of road maintenance needs;</li> <li>4. Recommendation for contracting procedures used at that time, building capacity of the local contracting industry, the availability of the equipment and the opportunities for privatization of the road construction industry; and</li> <li>5. An overview of the actual length and standards of the National Roads and Provincial Roads in Lao PDR with appropriate maps, tables and graphics;</li> </ol>

**Table 8A: Project Costs**  
(US\$ million)

Items	Appraisal Estimates			Actual/Latest Estimates		
	Local Costs	Foreign Costs	Total	Local Costs	Foreign Costs	Total
<b>Road rehabilitation</b>						
Road reconstruction including 6 bridges	0.613	30.047	30.660	4.864	37.278	42.132
Rehabilitation of 40 bridges	0.454	1.815	2.269	0.005	0.101	0.106
Operating costs (95%)	0.00	0.00	0.000	0.032	0.615	0.647
<b>Subtotal</b>	<b>1.067</b>	<b>31.862</b>	<b>32.929</b>	<b>4.891</b>	<b>37.994</b>	<b>42.885</b>
<b>Restoration of Road Capacity</b>						
Equipment	0.092	1.749	1.841	0.000	3.243	3.243
Operating Costs (95%)	0.400	1.600	2.000	0.054	0.850	0.944
TA + Maintenance Study	0.533	1.332	0.665	0.000	1.625	1.625
<b>Subtotal</b>	<b>0.825</b>	<b>4.681</b>	<b>5.506</b>	<b>0.094</b>	<b>5.718</b>	<b>5.812</b>
<b>Technical Assistance and Training</b>						
Project support						
Supervision of work	0.344	1.376	1.720	0.000	3.302	3.302
Project coordinator	0.180	0.720	0.9090	0.000	1.235	1.235
Studies for SHIP	0.100	0.400	0.500	0.000	0.125	0.125
Policy development TA to TPU	0.072	0.288	0.360	0.000	0.631	0.631
Fellowships		0.105	0.105	0.000	0.186	0.186
Short courses		0.030	0.030	0.000	0.036	0.036
<b>Subtotal</b>	<b>0.656</b>	<b>2.919</b>	<b>3.615</b>	<b>0.000</b>	<b>5.515</b>	<b>5.515</b>
<b>Total Base Cost</b>	<b>2.588</b>	<b>39.462</b>	<b>42.050</b>	<b>4.985</b>	<b>49.227</b>	<b>53.837</b>
<b>Contingencies</b>						
Physical	0.259	3.945	4.205			0.000
Price	0.379	6.016	6.395			0.000
<b>Total Project Cost</b>	<b>3.220</b>	<b>49.424</b>	<b>52.650</b>	<b>4.985</b>	<b>49.227</b>	<b>54.212</b>

**Table 8B: Project Financing**  
(US\$ million)

Source	Appraisal Estimates			Actual/Latest estimate		
	Local Costs	Foreign Costs	Total	Local Costs	Foreign Costs	Total
IDA	0.576	44.424	48.000	2.760	43.463	46.223*
NDF	0.000	5.000	5.000	0.000	5.764	5.764*
Government	2.649	0.000	2.649	2.225	0.000	2.225
<b>Total</b>	<b>3.225</b>	<b>49.424</b>	<b>52.649</b>	<b>4.985</b>	<b>49.227</b>	<b>54.212</b>

\*Higher than Loan amount due to favorable exchange rate SDR-US\$

**Table 9: Economic Costs and Benefits****(A) Economic Re-Evaluation Results For Individual Road Sections**

Road-Section	Length (km)	ERR at Appraisal	ERR at Project Completion
Nam-Tkk	155	17%	23.11%
Tkk-Seno	88	18%	17.74%
Seno-S'khet	28	30	34.71%
Total Project		17%	23.36%

**(B) Sensitivity Analysis Results For ERR at Project Completion**

No.	Case	Section-1	Section-2	Section-3	Project Roads
1	Base case	23.11	17.74	34.71	23.36
2	Benefit reduced by 15%	20.59	15.70	31.54	20.89
3	Cost increased by 15%	20.93	15.97	31.97	21.22
4	Combination of 2 and 3	18.57	14.04	29.00	18.90
5	Base case + Generated traffic	28.83	22.32	42.52	29.03
6	5 above + Residual value	28.86	22.57	42.53	29.05
7	Base case - Motorcycle VOC	19.10	14.87	29.42	19.43
8	50% lower traffic growth	13.97	9.94	23.62	14.29

Section 1: Namkading - Thakhek, Section 2: Thakhek - Seno, Section 3: Seno - Savanakhet

**Table 10: Status of Legal Covenants**

Section	Covenant Description	Status	Comments
A-IV, 4.01(a)	Maintain accounts.	C	MCTPC maintains accounts
A-IV, 4.01(b)	Audit accounts and furnish audit	C	MOF carries out audit as agreed in the DCA. Satisfactory audits provided on time.
S.4, (a)	By December 31, 1991, review NTS recommendations	C	Discussed with Transport Planning Unit
S.4, (b)(i)	Timely allocation for FY91 in such amount as shall be equivalent to not less than US\$3,300,000.00	CP	The Government spent US\$2.2 million in FY91-92 for maintenance activities
S.4, 4 (b) (ii)	Maintenance budget for following years, releases agreed with IDA	CP	Due to budget constraints, the Government allocated about 50% of maintenance funds needed to carry out maintenance activities. From FY94-96, the Government increase annual allocation but did not succeed to meet all needs. Discussion were held with each mission on this matter and new covenants have been introduced regarding maintenance budget in follow up projects
S.4, 4(c)	September 30 each year, discuss with IDA adequacy of following year's budget for maintenance and investment	C	Discussion on this matter is carried out with every mission.
S.4, 4(d)	By December 31, 1991, implement road user charges satisfactory to IDA	C	The Government has effectively increased the Road User Charges (RUCs). Currently, RUCs are theoretically sufficient to cover the maintenance cost of its network. However, an increasing share of vehicles and fuel escape taxes. In addition, the Government faces great difficulties in collecting all revenues due to a lack of resources in the Customs and Taxation Departments of MOF.
S.4, 4(e)	Replenish initial stocks of POL, parts and maintenance supplies.	C	Activity completed.
S.4, 4(f)	By July 1, 1991, establish PMU	C	The Project Management Unit has been established and maintained since the beginning of project activities.

Key = Not applicable; NC = Not complied; C = Complied; CP = Complied Partially

**Table 12: Compliance with Operational Manual Statements**

Statement Number and Title	Describe and comment on lack of compliance
There was no significant lack of	compliance with Bank's operational manual Statements

**Table 13: Bank Resources: Staff Inputs**

Project Stage	Staffweeks	Dollars (US 000)
Preparation	29.2	83.1
Appraisal	19.8	65.2
Negotiation/Board	7.7	25.8
Supervision	57.5	143.5
ICR	6.0	25.1
Total	120.2	342.7

**Table 14: Bank Resources: Missions**

Stage of project cycle	Month /year	No. of staff	Days in field	Specialized skills represented	Implemen-tation status	Develop-ment impact	Performance Rating	Types of problems
Through appraisal	5/90	5	11	HE, TE	-	-		-
Appraisal through Board approval	08/90	1	3	Proc. Specialist, TE	-	-		-
	09/90	1	3					
Board Approval through effectiveness	06/91	1	3	TE	-	-		-
Supervision 1	08/91	1	15	HE	-	-		-
Supervision 2	02/92							(1) IDA provided no objection to extend base course over whole width. (2) Delay in submitting nominations for degree courses
Supervision 3	10/92	2	8	HE, TE	S	S	Special account not opened	
Supervision 4	10/93	2	11	HE, TE	S	S	(a) Government very slow in paying 5% share of advance payment; (b) weak in developing training program.	
Supervision 5	03/94	2	18	HE, TE	S	S	Progress very slow on average: contractor has achieved 3.83 km /mo. in contract 1 and 3.50 km/mo. in contract 2--far less than present requirement of 5.5 km/mo. and 7 km/mo., respectively	
Supervision 6	06/94	2	3	HE, E	S	S	(1) Payments to state enterprise involved in spot improvement program follow lengthy procedures within MCTPC for approval. (2) MOF did not agree with use of funds on training, and mission rated training progress 4 because MOF does not want to use funds for this purpose.	
Supervision 7	11/94	3	7	HE, TE(2)	S	S	(a) Contractor staff poorly motivated; (b) disbursement under spot improvement very low	
Supervision 8	05/95	2	16	TE, HE	S	S	Most recent progress decreased due to inability of contractor to maintain sufficient number of staff. MOF refused authorization of training funds.	
Supervision 9	11/95	2	8	TE, HE	S	S	After numerous representations MOF is now willing to utilize funds provided for short-term training courses.	
Supervision 10	02/96	2	14	HE, TE	S	S	Restoration of capacity component significantly delayed due to very late procurement of NDF-financed road maintenance equipment.	
Supervision 11	05/96	2	20	HE, TS	S	S	Project Financial shortfall resolved by amending agreement of HIP and SHIP.	
Supervision 12	02/97	1	8	HE	S	S	All major works to be completed by 04/30/97 before credit closing date 06/30/97	
ICR mission	05/97	3	7	TS, HE. (2)	S	S	Handing over ceremony held on 04/18 taking over certificate signed on 04/29/97.	

S=Satisfactory, E=Economist, HE=Highway Engineer, TE=Transport Economist, TS=Transport Specialist

## **LAO P.D.R.**

**HIGHWAY IMPROVEMENT PROJECT-HIP (CREDIT 2218-LA)**  
**SECOND HIGHWAY IMPROVEMENT PROJECT-SHIP (CREDIT 2606-LA)**  
**THIRD HIGHWAY IMPROVEMENT PROJECT (CREDIT 2943-LA)**

**AIDE MEMOIRE**  
**ICR-SUPERVISION MISSION MAY 1997**

### **INTRODUCTION**

1. An International Development Association (IDA) mission comprising Messrs. Alain Labeau (Transport Specialist), Subhash Seth (Highway Engineer), and Denis Robitaille (Highway Engineer) visited Lao PDR from May 4 to May 12, 1997, to: (i) carry out an Implementation Completion Report (ICR) mission for the Highway Improvement Project (HIP); (ii) supervise the Second Highway Improvement Project (SHIP); and (iii) expedite starting activities for the recently approved Third Highway Improvement Project (THIP). The main purpose of the mission was to review the progress being made in implementing and preparing activities under the above-mentioned projects and to assist the Ministry of Communication, Transport, Post and Construction (MCTPC) in resolving outstanding issues.
2. During its stay, the mission carried out a field visit in Bolikhamxai, Khamouane and Savannakhet Provinces in order to: (i) inspect the works carried out by the contractor CTIETCC on Roads No.13 and No.9 between Namkading and Savannakhet under Contracts No.1 and No.2 (HIP); (ii) review the progress being made by the SOE contractor SRBCC in the construction of Road Nos. 11 and 13 in Savannakhet (SHIP); and (iii) to inspect part of Road No.13 from Ban Lak 35 (THIP).
3. In general, the mission is satisfied with the implementation progress of activities under these projects. This Aide Memoire records the findings of the mission, the views expressed on these by the Government and agreements reached which are subject to IDA management's review and confirmation. A summary of main task to be accomplished by all involved parties is provided under Attachment 1. The mission would like to express its appreciation for the courtesy and cooperation extended to it by all the agencies, organizations and personnel met. Copies of this Aide-Memoire have been provided to all interested parties.

**HIGHWAY IMPROVEMENT PROJECT - HIP - (Credit 2218-LA)**

**4. Project Status - Closing Date.** The mission reminded MCTPC that the credit closing date of June 30, 1997 will remain unchanged, and all activities must be completed before this date in order to be eligible for expenditure.

**Implementation Completion Report (ICR)**

**5. GOL's ICR.** The mission reminded MCTPC that in accordance with the "General Conditions Applicable to Development Credit Agreements", GOL has to prepare its own final evaluation report on HIP by October 1, 1997. If the report is longer than 10 pages, GOL is encouraged to prepare a summary. The evaluation report/summary will be attached unedited to the ICR and will include:

- a) an assessment of the project objectives, design, implementation, and operation experience;
- b) an evaluation of the borrower's own performance during the evolution and implementation of the project, with special emphasis on lessons learned; and
- c) an evaluation of the performance of the IDA and any other co-financiers during the evolution and the implementation of the project, including the effectiveness of the cooperation between the Borrower, IDA, and the co-financier, with special emphasis on lessons learned.

**6. Economic Re-Evaluation of HIP Road Rehabilitation Component.** The mission requested MCTPC to prepare an economic re-evaluation of the road rehabilitation component with the support of the supervising consultants and send it to IDA for comments by June 15, 1997. The supervising consultants have provided the services of a transport economist who will collect all the data from the field and other government agencies and will submit a report to MCTPC. The mission requested that the economic re-evaluation be carried out for the whole road rehabilitation component as well as for its three sections individually, so that the analysis could be compared with the economic evaluation carried out at the time of project appraisal. PCU agreed to provide all needed economic data available to the economist.

**7. GOL's Contribution to IDA's ICR.** The mission provided the copy of ICR guidelines. In order to complete/compare with information collected during the mission, PCU agreed to send to IDA by May 31, 1997, the following information: (a) statistical tables 5, 6, 7, 8A, 8B and 9 ;(b) key points relating to major factors affecting the project; (c) the reasons for cost changes and other changes in the project scope/design, physical quantities, base unit costs and cost of engineer estimate on the basis of which bids were invited in 1991; (d) inadequacy regarding price contingencies, if any, and changes in the exchange rates, (e) the reasons for implementation delay, if any, in the procurement of civil works, equipment and consulting services; (f) project sustainability; (g) sector

specific data including road expenditures, budget allocation for road and bridge construction/ maintenance, and road user charges fiscal year 94/95 and 95/96.

**8. Final Cost of Road Rehabilitation.** The mission was informed by the supervising consultants that the final cost of both contracts on Road No.13 and Road No.9 would be available by May 31, 1997. Therefore, the mission requested PCU to update all the figures and send them to IDA by June 30, 1997. It is expected that on completion of works, the final amount would be approximately US\$56.00 million, compared with the contract award of US\$44.68 million. There are several reasons for the cost increase of US\$11.32 million, which is comprised of: (a) US\$3.950 million due to change in design duly approved (crushed stone base course under the shoulders, replacement of old culverts and the bridge No.20 at Nam Hay); (b) US\$1.12 million due to increase in the scope of works duly approved by all involved parties (length increase of NR 13 for 10 km, NR 12 for 1 km, and Thakhek bypass for 0.5 km); (c) US\$5.85 million on account of price escalation; and (d) US\$0.40 million due to minor variations orders.

**9. Future Operation:** The plan for the project's future operation is very important to its success. The mission requested PCU to prepare an operation plan and send it to IDA for review by July 31, 1997. The mission provided to PCU the guidelines for its preparation which mainly includes the following: (a) the appropriate technical, financial and institutional arrangements to ensure effective project operation; (b) list of performance indicators by which the project can be monitored and evaluated in the future; and c) a monitoring evaluation system, if in place.

**Civil Works- Contract Nos. 1 and 2- (Namkading-Savannakhet Road, 266 km)**

**10. Hand Over.** Following the substantial completion of both contracts, a handing over ceremony attended by dignitaries of Governments of Lao PDR, India and China was held on April 18, 1997. The supervising consultant prepared the Hand Over Inspection Certificate dated April 29, 1997 transferring the responsibility of the maintenance of the road to the Government of Lao PDR. Part of the contractor's one-year Defect Liability Period, correction and few remaining works have been identified and will be carried out by the contractor by May 31, 1997 (lined drain, protection works, cleaning, road signs and guards posts) and by November 1, 1997 (reconstruction of a 1 km stretch, ref.: para.11 item (iii)). The supervising consultant will prepare the Final Payment Certificate by May 31, 1997.

**11. Issues.** *(i) Road Marking.* As planned, quotations were requested from two local enterprises to carry out road marking on the total rehabilitated length of Road No.13 and Road No.9. Since HIP Credit funds are all spent or committed, it was proposed that SHIP Credit funds (Schedule 1, Category 4) finance road marking. However, due to budget limitations, it was decided that only the centerline would be painted. During mission's stay, MCTPC provided its recommendation for contract award and requested IDA's no objection. The mission will review the proposal upon its return to headquarters and

transmit IDA's comments by May 31, 1997. (ii) Safety Design - Namkading Sub-Standard Curve. As agreed during the last mission, speed bumps built in the curve on the south bank of the Namkading river have been replaced by additional strips of bituminous surface treatment (sound-warning device). (iii). Depressions and Undulations As agreed, the supervising consultant investigate causes of depressions and undulations on pre-identified road stretches. Based on DCP tests, the supervising consultants requested the contractor to rebuilt a total of 1,190 m over 4 different stretches. Three stretches for 190 m have already been rebuilt. For the remaining 1 km stretch (Km 90+000), it was agreed that it would be preferable to wait for the beginning of the next dry season (October 1997) before proceeding. (iv) Slope Protection. The consultant noticed that the contracts do not include protection works on some high embankment slopes and suggested that vetiver grass be used to avoid important erosion. The mission requested that the supervising consultant prepare by May 31, 1997, an inventory of the problematic slopes accompanied by a detailed cost estimate to MCTPC for future consideration.

**12. Bridge Construction Progress.** All bridges have been completed. The mission was informed that the claim raised by the contractor due to additional depth of pile foundation has been settled.

## SUMMARY OF MAIN TASKS TO BE ACCOMPLISHED

### Highway Improvement Project (Credit 2218-LA)

<u>Activities</u>	<u>Action Taken By</u>	<u>Deadline</u>
GOL's ICR (para.5)	MOF & MCTPC (DOC, PCU)	Oct. 1, 97
Draft Economic Re-Evaluation Report of the Road Rehabilitation Component (para.6)	CES	June 15, 97
Information for IDA's ICR (para.7)	PCU	May 31, 97
Cost changes update (para.8)	PCU	June 30, 97
Future Operation Plan (para.9)	PCU	July 31, 97
Draft ICR to the GOL and NDF for comments	IDA	Nov.01, 97
Final ICR	IDA	Dec. 31, 97
Final Payment Certificate for Contracts No.1 and No.2 (para.10)	CES, PCU	May 31, 97
Road Marking, review of MCTPC's proposal (par.11)	IDA	May 31, 97
Rebuilt 1 km stretch on Road No.13 (para.11)	CTIETCC	Oct. 97
Details on Slope Protection (para. 11)	CES	May 31, 97

### Second Highway Improvement Project (Credit 2606-LA)

<u>Activities</u>	<u>Action Taken By</u>	<u>Deadline</u>
Request IDA's no-objection on MCTPC's recommendation of award for Contract No.3 (para.14)	PCU	May 20, 97
Monthly cash journal review (para. 15)	PCU	May 15, 97
Provision of remaining Monthly cash journal (para.15)	SRBCC	May 31, 97
Develop Bridge Management System (para.17)	RAD	Dec. 31, 97

### Third Highway Improvement Project (Credit 2943-LA)

<u>Activities</u>	<u>Action Taken By</u>	<u>Deadline</u>
Reply to MOF's signature request (para.21)	IDA	May 15, 97
Ministerial approval of road numbering and referencing systems and numbering of national roads (para.22)	MCTPC	May 31, 97
Set up committee for Pre-Qualification evaluation applications (para.23 (i), 1)	MCTPC	July 1, 97
Submit Periodic Maintenance Program (para.23 (ii))	RAD	May 31, 97
Submit Routine Maintenance Program (para.23 (ii))	RAD	July 1, 97
Implementation plan for Transport Study (para.24)	Polytechnic	June 1, 97

**LAO PEOPLE'S DEMOCRATIC REPUBLIC**  
**Peace Independence Democracy Unity Prosperity**

**MINISTRY OF COMMUNICATION TRANSPORT  
POST AND CONSTRUCTION**

No.

**DRAFT  
MCTPC**

**HIGHWAY IMPROVEMENT PROJECT**

Credit 2218-LA

**IMPLEMENTATION COMPLETION REPORT**

## PROJECT IMPLEMENTATION ASSESSMENT

### A. *Assessment of the project objectives*

The project objectives were:

1. Rehabilitation and bituminous surfacing of the Namkading-Savannakhet road (266km), including replacement of six bridges and the rehabilitation of 40 bailey bridges along this road.
2. Heavy equipment to be provided under the project by NDF to strengthen and improve the institutional capacity for road maintenance in Lao PDR. Restoration of road capacity through a spot improvement program in critical road sections to be carried out by two RBMSs with the provision of equipment and technical assistance.
3. Technical assistance (TA) :
  - a. To Transport Planning Unit to follow up the NTS and the preparation of future projects.
  - b. To MCTPC to coordinate the project implementation, Project coordinator under NDF
  - c. Maintenance Consultants under NDF Credit
  - d. Training for MCTPC staff.

All the project objectives were appropriate and consistent with the Government's policy. The project was successful in achieving its principal objectives:

- a. The rehabilitation of a priority section of the main North-South road artery (RN13) was achieved. The road rehabilitation length increased by 10 km, the design of shoulders was improved to provide more strength, a new by-pass to the city of Thakhek was added and junctions along the road were improved.

The Civil works were carried out under 2 contracts with the same contractor, and suffered delay because of i) improper site management and ii) additional works. The repeated follow up by IDA Mission, MCTPC, and Consultants contributed to complete the road rehabilitation by the Credit closing date.

The project encountered financing problems with a shortfall of about US\$ 21.1 million, shares are, Government US\$ 1.0 million and IDA US\$ 18.6 million for Civil Works and US\$ 1.5 million for Consultant services and Fellowships.

This shortfall was mainly due to 4 main factors:

- i) Higher bid prices for road construction of US\$ 6.2 million due to inaccurate evaluation of the contract's estimate amounts,
- ii) Design modification US\$ 9.9 million for major improvement of the road design to improve the road quality and its life expectancy ( shoulders built with crushed

- stone material as used for base course, drainage concrete pipes increased from 0.6 to 1.0 meter,
- iii) Additional works US\$ 3.5 million at the government request for two additional stretches, Thakek by-pass and Naxay-Seno,
  - iv) US\$ 1.5 million for consultancy services and training

To cover the financial gap, the Government requested and IDA agreed to amend the Credit Agreement as follow:

- i) An Amendment under HIP was issued to reallocate funds between the different categories giving:
  - . SDR 28.10 million for category 1, Civil Work
  - . SDR 0.55 million for category 2, Small equipment and road restoration
  - . SDR 2.7 million for category 3, Technical assistance
  - . SDR 0.75 million for category 4, Un-allocated.
- ii) An Amendment under SHIP was also issued reallocating SDR 9.0 million from the existing categories to create a new category 4 "Road rehabilitation" under SHIP to finance the remaining gap of the Civil Work contracts.

b. Road restoration capacity

There was some delay in providing the heavy equipment due to the time taken for approving and carrying through the procurement and commissioning procedures. This has contributed to the slow initial progress of the spot improvement works.

The cost of the heavy equipment was greater than scheduled due to the advantageous change in exchange rate for SDR, the total NDF budget component has not been exhausted, allowing an extension of the project coordinator services until end 1997.

c. Institutional Development objectives

The institutional objectives were achieved satisfactory. The Technical Assistance to MCTPC for Project implementation, Transport planning, and Road maintenance capacity was very effective.

The work of the Project Coordinator provided under NDF component has been carried out satisfactory. His considerable work load has included duties in running the project which was not directly related to his Terms of Reference and MCTPC recognize to have spent too much time to appoint a suitable counterpart.

The services of the Maintenance advisors provided under NDF component have been carried out in an acceptable manner. The assistance of only 2 maintenance advisors, with the whole country as project area, has put a high project workload on these 2 advisors; the main effort has been concentrated on Spot improvement works. The effort put into training counterparts, MCTPC staff and contractor in spot improvement works carried out seems to have been satisfactory. More output may have been expected in the establishment of a Pavement Management System.

The maintenance study procured a comprehensive and acceptable report for planning and policy system to be used for the future works of the Road Administration Division and has also contributed to the successful reorganization of the RAD.

B. *Borrower's own performance.*

1. Civil work implementation

MCTPC established a Project Management Unit, based partly (75%) in Thakek and (25%) in Vientiane for the day to day management and working as MCTPC's representative on site, their efforts were concentrated more in project administration than in technical aspects. For the technical matters on the job training, MCTPC has appointed 4 persons working as counterpart of the Consultant's supervision team and gained a great experience in the work quality requirements.

The key lesson learned on this aspect is that MCTPC must paid careful attention to Project design, cost estimates, and contract documents in order to avoid overrun costs due mainly to additional works not included in the detailed design engineering study.

2. Road restoration capacity

According to the recommendations of the Maintenance study MCTPC has reorganized his Maintenance division called now Road Administration Division (RAD).

Road work in Lao PDR was until now comprising construction, rehabilitation, and spot improvement, systematic maintenance such as routine and periodic maintenance was virtually non existing because the road network was in such a poor state than nearly all funds available have been used for opening up the network and making road as possible trafficable.

The key lesson learned is that it is important to establish a systematic maintenance mechanism for the country network in implementing routine and periodic maintenance program. It is also important to develop the contracting industry in order to make sure that these will be qualified organizations to execute the maintenance work.

Upon completion of this project a network of road maintenance system was established with MCTPC at the central level responsible for the planning of the budget for maintenance and DCTPC in the provinces are responsible for implementation of the maintenance works (Decentralization).

Important Technical assistance input is required in order to successfully introduce maintenance management procedures. Training of local Enterprises is required in the technical aspects of maintenance work and in the commercial aspects of running a contracting enterprise.

3. Institutional Development

The short term training program was not effective as planned due to substantial delays in approval of training program .Now MCTPC has utilized the funds for short-term training,

in the English language, technical workshops, etc. which are very helpful to upgrade the capabilities of MCTPC's staff.

The fellowships program has been spent in full, 4 students in economics and 3 students in engineering were nominated and are now scheduled to complete their degree in 1998 except for one of them who renounced for private reasons.

The key lesson learned is the importance of the training component and for this reason the budget allocated for this component increased by 2 times in the SHIP and further in the THIP.

It had been a learning process for MCTPC in term of taking over ownership in the project implementation. Now MCTPC take the program approach instead of project approach in the coordination with different Donors in the road sector.

#### *C. Bank and co-financiers' performance*

IDA performance during the project preparation, appraisal, and supervision was very professional, objectively oriented with a good understanding of the Borrower's institutional capabilities.

#### *D. Comments on the Bank staff's draft ICR*

Not available.

#### *E. Statistical information.*

Herewith, copy of the Table 8A, Project Costs and Table 8B, Project financing sent to IDA by May 29, 1997.

Vientiane, 24 NOV 1997

For MOF

Bounlith KHENNAVONG  
vice Minister of Finance

For MCTPC

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**Table 8A: Project Costs  
(US\$ million)**

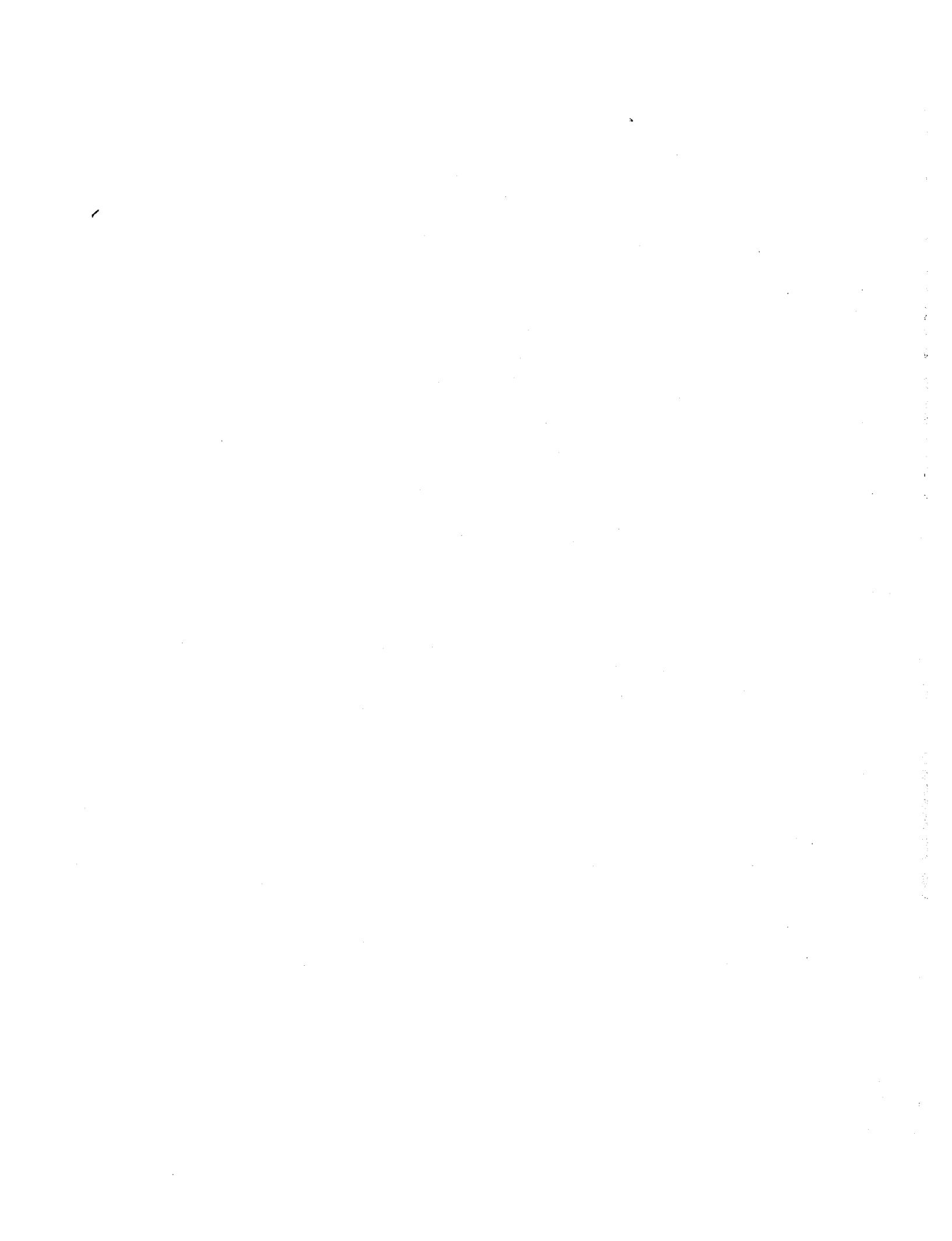
Items	Appraisal estimates			Actual/latest Estimates		
	Local Costs	Foreign Costs	Total	Local Costs	Foreign Costs	Total
Road rehabilitation						
Road reconstruction including 6 Bridges	0.613	30.047	30.660	4.854	37.130	41.984
Rehabilitation of 40 Bridges	0.454	1.815	2.269	0.005	0.101	0.106
Operating costs (95%)	0.000	0.000	0.000	0.032	0.615	0.647
Subtotal	1.067	31.862	32.929	4.891	37.846	42.737
Restoration of Road capacity						
Equipment	0.092	1.749	1.841	0.000	3.243	3.243
Operating costs (90%)	0.400	1.600	2.000	0.094	0.850	0.944
Technical Assistance+Maint. study	0.333	1.332	1.665	0.000	1.625	1.625
Subtotal	0.825	4.681	5.506	0.094	5.718	5.812
Technical Assistance and Training						
Project support						
Supervision	0.344	1.376	1.720	0.000	3.302	3.302
Project coordinator	0.180	0.720	0.900	0.000	1.235	1.235
Studies for SHIP	0.100	0.400	0.500	0.000	0.125	0.125
Policy development						
TA to TPU	0.072	0.288	0.360	0.000	0.631	0.631
Fellowships		0.105	0.105	0.000	0.186	0.186
Short Courses		0.030	0.030	0.000	0.036	0.036
Subtotal	0.696	2.919	3.615	0.000	5.515	5.515
Total Base Cost	2.588	39.462	42.050	4.985	49.079	54.064
Contingencies						
Physical	0.259	3.946	4.205		0.000	
Price	0.379	6.016	6.395		0.000	
Total Project Cost	3.226	49.424	52.650	4.985	49.079	54.064

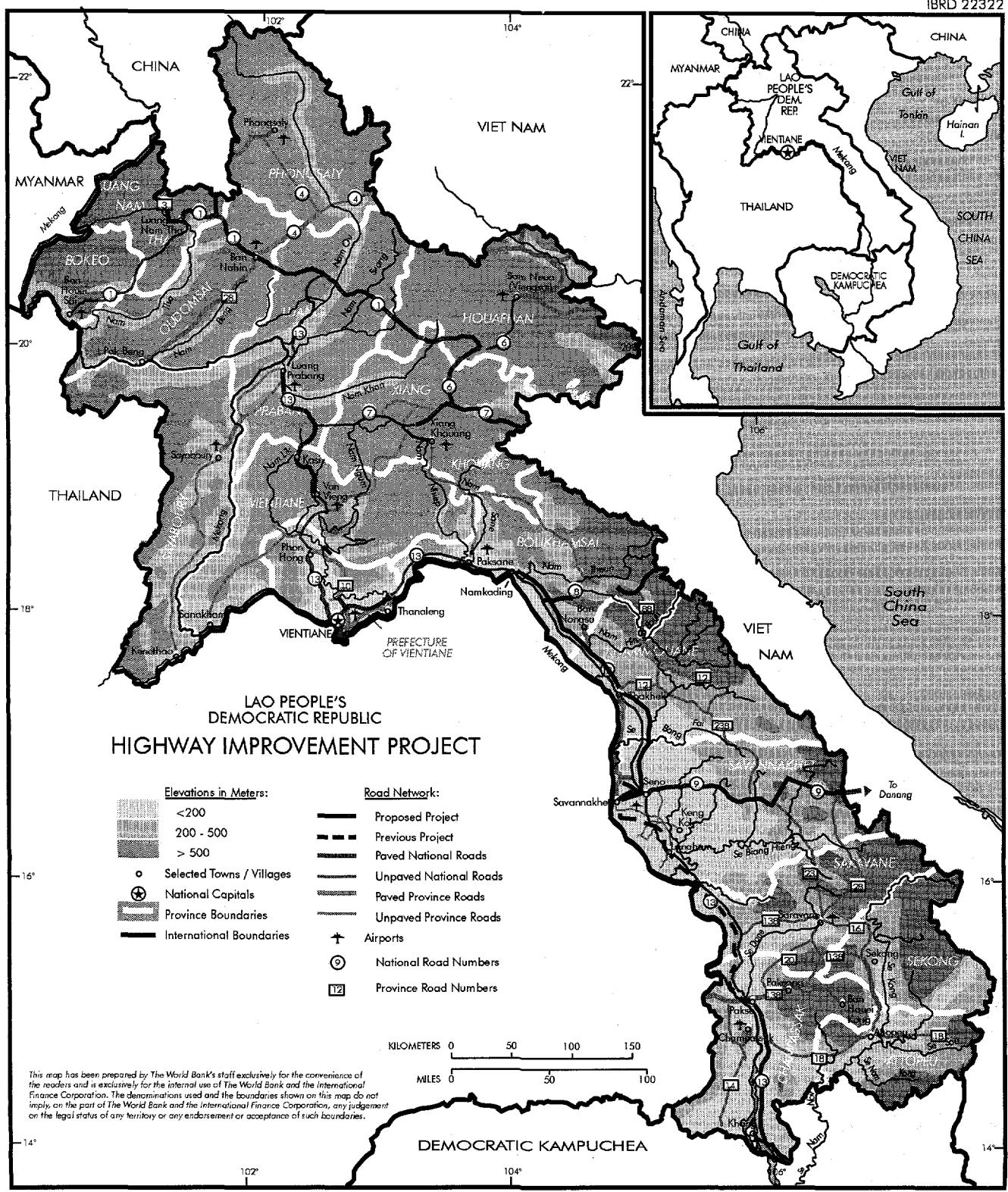
**Table 8B: Project Costs  
(US\$ million)**

Items	Appraisal estimates			Actual/latest Estimates		
	Local Costs	Foreign Costs	Total	Local Costs	Foreign Costs	Total
ICA	0.576	44.424	45.000	2.755	43.320	46.075
NDF	0.000	5.000	5.000	0.000	5.759	5.759
Government	2.649	0.000	2.649	2.230	0.000	2.230
<b>Total</b>	<b>3.225</b>	<b>49.424</b>	<b>52.649</b>	<b>4.985</b>	<b>49.079</b>	<b>54.064</b>



## **MAP SECTION**





FEBRUARY 1991