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PROJECT COMPLETION REPORT

KINGDOM OF LESOTHO

**THIRD HIGHWAY PROJECT
(CREDIT 884-LES)**

DECEMBER 30, 1988

**Infrastructure Operations Division
Southern Africa Department
Africa Region**

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ABBREVIATIONS AND ACRONYMS

AFDB	-	African Development Bank
AIDF	-	African Development Fund
EEC	-	European Economic Community
ICB	-	International Competitive Bidding
LCU	-	Labor-Intensive Construction Unit
MOW	-	Ministry of Works
ODA	-	Overseas Development Administration, United Kingdom
PVPS	-	Plant and Vehicle Pool Service
RB	-	Roads Branch
RSA	-	Republic of South Africa
vpd	-	vehicles per day

Office of Director-General
Operations Evaluation

December 30, 1988

MEMORANDUM TO THE EXECUTIVE DIRECTORS AND THE PRESIDENT

**SUBJECT: Project Completion Report on Lesotho Third Highway Project
(Credit 884-LES)**

Attached, for information is a copy of a report entitled "Project Completion Report on Lesotho Third Highway Project (Credit 884-LES)" prepared by the Africa Regional office. Further evaluation of this project by the Operations Evaluation Department has not been made.

Attachment

A handwritten signature in black ink, appearing to be 'R. P. ...', is written over the word 'Attachment'.

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Preface

This Project Completion Report (PCR) has been prepared for the Third Highway Project in Lesotho for which Credit 884-LES was signed on April 6, 1979. The Credit comprised of US\$9.0 million in IDA funds and a US\$2.2 million EEC Special Action Credit. The closing date of the IDA Credit was January 9, 1986, three years later than estimated at appraisal; US\$2.14 million of the credit funds were cancelled. The EEC Special Action Credit was closed on June 30, 1984, six months later than estimated at appraisal; US\$0.56 million of the credit funds were cancelled.

The PCR was prepared by the Southern Africa Infrastructure Operations Division and is based on a completion report for the project dated August 6, 1987 submitted by the Borrower, Staff Appraisal Report No. 2200b-LES dated February 2, 1979, supervision reports, legal documents, and consultant progress and other reports. No correspondence files were found in the Africa Information Service Center. The record of the Information Service Center indicates that the files were sent to the previous Eastern Africa Transportation Division who claimed that the files were returned to the Information Service Center.

In accordance with the revised procedures for project performance reporting, this PCR was read by the Operations Evaluation Department (OED) but the project was not audited by OED staff. The draft PCR was sent to the Borrower for comments on August 23, 1988. No comments were received.

PROJECT COMPLETION REPORT
LESOTHO: THIRD HIGHWAY PROJECT (CREDIT 884-LES)
BASIC DATA SHEET

KEY PROJECT DATA

Item	Appraisal Expectation	Actual or Current Estimate
Total Project Cost (US\$ million)	13.13	11.70
Underrun or Overrun (%)		11
Loan/Credit Amount (US\$ million)		9.0 1/
Disbursed		6.9
Cancelled (EEC Credit)		0.6
(IDA Credit)		2.1
Repaid to December 31, 1987		0.0
Outstanding as per December 31, 1987		6.9
Date Physical Components Completed	12/82	6/85
Proportion Completed by Above Date (%)		50
Proportion of Time Underrun or Overrun (%)		50
Economic Rate of Return (%)	42	39
Institutional Performance	Good	Fair

1/ Excludes EEC Special Action Credit of US\$2.2 million

OTHER PROJECT DATA

Item	Original Plan	Revisions	Actual or Estimated Actual
First Mention in Files or Timetable	-	-	3/76
Government's Application			
Negotiations			01/79
Board Approval			03/13/79
Loan/Credit Agreement Date			04/06/79
Date of Effectiveness	06/79		12/11/79
Closing Date	06/30/83	03/30/85	03/31/86
Borrower		Kingdom of Lesotho	
Executing Agency		Ministry of Works	
Fiscal Year of Borrower		April 1 - March 31	
Follow-on Project Name		Fourth Highway Project	
Loan/Credit Number		Credit 1481-LES	
Amount (US\$ million)		\$15.2 million	
Loan/Credit Agreement Date		July 9, 1984	

ACCUMULATED DISBURSEMENTS (US\$ MILLION)

FY	1980	1981	1982	1983	1984	1985	1986
Appraisal	2.0	6.0	8.9	9.0	9.0	9.0	9.0
Actual 1/	0	0.5	0.8	3.4	4.7	6.7	6.9
Actual as % of Appraisal	0	8	9	38	52	76	77

1/ Excludes EEC Special Action Credit
2/ A total of US\$2.7 million cancelled.

MISSION DATA

Item	Month/ Year	No: of Weeks	No: of Persons	Manweeks	Date of Report
Identification					
Preparation	02/77	1	1	1	03/77
Preappraisal					
Appraisal	05/78	3	2	6	07/78
Total					
Supervision 1	02/80	1	1	1	03/80
Supervision 2	03/81	2	1	2	04/81
Supervision 3	12/81	1	1	1	12/81
Supervision 4	11/82	1	1	2	12/82
Supervision 5	03/83	1.5	2	3	04/83
Supervision 6	08/83	1	1	1	09/83
Supervision 7	10/84	1	1	1	11/84
Total		<u>12.5</u>		<u>19</u>	

EXCHANGE RATE

Name of Currency (Abbreviation) Year:	Maloti (M)
Appraisal Year Average (1978)	Exchange rate: US\$1 = 0.87
Intervening Years Average (1979-84)	US\$1 = 1.03
Completion Year Average (1985)	US\$1 = 2.19

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HIGHLIGHTS

(i) Highly mountainous with difficult terrain, and wintry conditions at high altitude, Lesotho depends almost exclusively on road and air transport for internal transportation. While the domestic air service is reasonably effective, the road network is inadequate both in length and in condition, particularly in the eastern region of the country. Much of the network is poorly maintained and many roads can be traversed only in the dry season, and even then by four-wheel drive vehicles only.

(ii) The primary objective of the Third Highway Project was to improve the maintenance of Lesotho's road network through (i) the establishment of equipment and labor-intensive brigades to help reduce the regraveling backlog; (ii) the strengthening of road maintenance and equipment maintenance units in the various regions of the country; and (iii) the strengthening of the Roads Branch (RB), the unit under the Ministry of Works (MOW) in charge of planning, design, construction and maintenance of roads under MOW's jurisdiction and the Plant and Vehicle Pool Service (PVPS) of the Central Mechanical Workshop and Plant Pool (CMWPP). Road maintenance was slow to improve since the project took over six years to implement instead of the three years estimated at appraisal, but the improvements that were begun under the Third Highway Project are continuing under the follow-up Fourth Highway Project (Credit 1481-LSO). The backlog of regraveling was reduced, although not eliminated, and routine maintenance operations improved. Nevertheless, there still remains room for improvement in productivity of maintenance operations, especially for equipment.

(iii) A second objective of the project was to establish a labor-intensive work program within the Ministry of Works in line with Government policy to provide more employment opportunities within Lesotho in the eventuality that employment opportunities for Basotho in the Republic of South Africa (RSA) were reduced. The program was based on the findings of the pilot labor-intensive project financed under the Second Highway Project (Credit 619-LSO). Two brigades were established under the project for this purpose but one continued to suffer from serious staffing problems throughout the project. Support for the program has continued under the ongoing Credit 1481-LSO.

(iv) There were two major revisions to the project during implementation. These were: (a) the complete change of roads improvement

work program by the equipment and labor-intensive brigades, and (b) the change in the composition of technical assistance. The roads improvement program changed before implementation got underway because of a change in Government's priorities. Another change was made later when it turned out that much heavier improvement work was necessary on the unimproved roads than originally anticipated. It was agreed that the Government financed brigade would work principally on roads which required extensive earthworks/drainage prior to regravelling whereas the IDA funded brigade would be used for regravelling roads which already had received some basic improvement and were under regular maintenance. The composition of technical assistance changed due to the changing requirements for technical assistance for the Roads Branch - because of additional donor assistance received - and the Plant and Vehicle Pool Service - because of additional staffing requirements towards the later half of the project.

(v) There were significant cost savings in US\$ terms because of the decline in the value of the Maloti/Rand against the US dollar during implementation of the project. However, costs expressed in Maloti were only about 9% higher than estimated at appraisal. The costs of the paving component increased in real terms because of the bankruptcy of the contractor selected under ICB and the lengthy time taken to complete the work by force account. The increase in cost was financed from savings in other components.

(vi) There were substantial delays for all components of the project. The serious shortage of professional staff in the Roads Branch and Plant and Vehicle Pool Service resulted in delays for practically every component of the project, especially involving preparation of bidding documents, tender evaluations and definition of work programs. Shortages of staff in the Ministry of Work's Architects Department also resulted in delays in the buildings and workshop components. As can be seen in Annex 2, most of the project components had not even begun by the time of the completion date estimated at appraisal. Although the critical shortage of staff had been identified at appraisal, the Association made insufficient allowance for those preparatory tasks that had to be carried out by RB staff and consequently produced totally unrealistic implementation and disbursement schedules.

(vii) The staffing situation had somewhat improved by the end of the project, although lack of local professional and other staff was still a serious problem. Training of engineers has been a slow process and not all return to the Roads Branch and Plant and Vehicle Pool Services. Consequently, both departments will likely continue to depend on substantial expatriate assistance over the next several years, especially given the high demand for engineers required for the forthcoming Lesotho Highlands Water Project. Greater efforts need to be taken by Government to improve the educational system so as to provide more candidates suitably qualified to enter engineering degree courses and eventually increase the number of graduate engineers.

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I. INTRODUCTION

1.01 Highly mountainous with rugged terrains and wintry conditions in the highlands, Lesotho depends almost exclusively on road and air transport for internal transport. The country has no navigable rivers and no railway except for a short (2km) rail link operated by South African Railways from the South Africa border to Maseru. While the domestic air service is reasonably effective, the road network is inadequate in length and in condition, particularly in the eastern region of the country. Much of the network is poorly maintained and many roads can be traversed only in the dry season, and even then only by four-wheel drive vehicles.

1.02 During the 1970s, Lesotho began to expand its road network and upgrade earth roads to gravel and paved standard. The first two IDA projects assisted the Government with upgrading part of the main north-south road to paved standard and a major road into the eastern highland area to gravel standard. By 1978, when the Third Highway Project was appraised, there were 1,800 km of classified roads, of which 13% were paved and 29% two-lane gravel. There were plans to double the paved network over the next five years and to increase the gravel road network by 50%. While the five-year plan was ambitious, by the end of the period in 1983 classified roads in the country had increased by 33% to 2,386 km, of which 17% were paved, 69% gravel and 14% earth. The rapid expansion of the road network had, however not been matched by expansion of maintenance capacity since low priority was given to road maintenance with the result that many of the roads were in poor condition, particularly gravel roads. As early as 1978, it was estimated that about 25% of the paved network required resealing and 75% of gravel roads regravelling. Consequently, the Third Highway Project focussed on strengthening the road maintenance organization to ensure that the large investments being made in the road network would be protected.

1.03 As part of the Second Highway Project (Credit 619-LSO) labor-intensive methods of road improvement had been developed on a pilot basis, in line with the Government's policy to make Lesotho less dependent on employment of Basotho in the RSA. The Third Highway Project assisted with the development of the labor-intensive program, along with other bilateral donors, concentrating on meeting some of the maintenance requirements by using labor-intensive methods.

II. PROJECT IDENTIFICATION, PREPARATION, APPRAISAL AND NEGOTIATION

Identification and Preparation

2.01 The poor maintenance of the classified road network in Lesotho was identified as a major issue during the preparation of the Second Highway Project 1975. Subsequently, a maintenance program was prepared during implementation of the Second Highway Project in order to form the basis for the Third Highway Project. The program was based on the findings of two

studies - the first was a study (financed under the Second Highway Project) of the operations of the Ministry of Work's (MOW) Plant and Vehicle Pool Service (PVPS), and the second was a study (financed by the African Development Fund (AfDF)) of classified road maintenance requirements and operations of the Maintenance Division of the Roads Branch (RB).

2.02 The poor maintenance of the road network was attributed to:

- the serious lack of staff in both RB and PVPS at the professional, technical and skilled labor levels;
- the lack of a regional organization;
- insufficient funding of road maintenance and delays in the release of funds;
- lack of programming of maintenance activities;
- inadequate cost accounting;
- lack of a road inventory; and
- generally inefficient operations and correspondingly low levels of productivity.

2.03 The Second Highway Project also included a pilot project for the establishment of a Labor-Intensive Construction Unit (LCU) within MOW. The program was intended to support the Government's objective of expanding domestic employment, especially in the event that the number of miners and other workers employed in RSA would be reduced. The labor-intensive component of the Third Highway Project was based on the experience of the Second Highway's pilot project.

2.04 Upgrading of two road projects were requested by the Government during preparation of the Third Project. The first was upgrading of the Joels Drift-Khamane road (28 km) to paved standard and the second was the upgrading of the St. Michaels-Molimo Nthuse road (24 km) to paved standard. The latter was being constructed to gravel standard as part of the St. Michaels-Mantsonyane (95 km) road under the Second Highway Project, but due to the deterioration of this one section of road because of heavy rains, rugged terrain and higher than expected traffic, paving was considered more economical than frequent regravelling.

Appraisal

2.05 The project was appraised in May 1978. It included the upgrading of the Joels Drift-Khamane and St. Michaels-Molimo Nthuse roads (para 2.04), improvement of road maintenance, including workshops and operational costs for one equipment-intensive and two labor-intensive brigades to help clear the regravelling backlog, technical assistance and training. The total cost of the project as estimated at appraisal was US\$19.1 million which meant that there was a shortfall of US\$8.7 million in the financing of the project based on the initially proposed US\$7.5 million IDA Credit and a 15% Lesotho Government contribution. Funding was subsequently obtained from the African Development Bank (AfDB) for the upgrading of the Joels Drift-Khamane road, therefore this component was dropped from the Third Highway Project.

2.06 After appraisal, changes to the project composition and cost estimates were proposed by RB and accepted by IDA. The major change was

that equipment for the equipment-intensive brigade should be purchased and owned by RB rather than being rented from PVPS, given the poor level of service offered by PVPS at that time. Other additions to the project included the construction of RB regional offices at Leribe, Thaba Tseka and Mohale's Hoek, extension of the Maseru RB buildings, and accommodation facilities for PVPS regional staff. The proposed technical assistance for PVPS was substantially reduced from US\$1.7 to \$0.23 million on the understanding that ODA would finance the required assistance. The final project cost was US\$12.64 million (excluding taxes).

Negotiations, Board Approval and Credit Effectiveness

2.07 The Credit was negotiated in Washington in January 1979. It was approved by the Board on March 13, 1979. The IDA Credit had been increased from US\$7.5 to US\$9.0 million, covering 71% of project costs. In addition, joint financing had been obtained in the form of a EEC Special Action Credit of US\$2.2 million which financed another 17% of project costs. The Government of Lesotho (GOL) was to fund the remaining 12%. IDA Credit effectiveness was conditional upon formal agreement between GOL and the ODA on financing of technical assistance for PVPS's head office and central workshop. The IDA credit was expected to become effective in June 1979. Effectiveness was delayed by six months because of delays in signing the ODA agreement.

Project Objectives and Description

2.08 The principal objectives were to assist the Government in strengthening of road maintenance as its priority objective for highway investment through restoration of the classified network to a satisfactory condition and the improvement of the operations of RB and PVPS as well as opening up of the eastern mountain area of Lesotho. The project consisted of the following components:

(a) Road construction

Upgrading to paved standard of St. Michaels-Molimo Nthuse road. Supervision of construction by consultants.

(b) Road maintenance

Equipment purchase, spares, fuel, and repairs, materials, and salaries of one equipment-intensive regravelling brigade.

Equipment purchase, spares, fuel and repairs, materials, transport of materials, wages and salaries for two labor-intensive brigades.

Construction and equipping of regional workshops for PVPS plus staff accommodation.

Construction of regional offices, road camps and office accommodation for RB.

Road maintenance equipment.

Material purchase for Government financed equipment - intensive brigade.

(c) Technical assistance and training

Technical assistance to improve RB and PVPS operations.

Fellowships for RB and PVPS trainees.

(d) Oxbow-Mokhotlong Road

Feasibility study and detailed engineering.

III. PROJECT IMPLEMENTATION AND COST

Implementation Arrangements

3.01 Overall responsibility for project implementation was assigned to the Ministry of Works (MOW), assisted by consultants. Paving of the St. Michaels-Molimo Nthuse road was to be carried out by contractor selected under international competitive bidding (ICB) procedures with consultants selected under IDA guidelines providing supervision of the construction. RB's Periodic Maintenance Section was to be in charge of organizing and executing the road maintenance program, with RB's Design and Planning Section preparing any engineering drawings required, and RB's Soils Laboratory carrying out the site investigations and soil tests. Equipment procured under the project were to be maintained and operated by PVPS. The equipment-intensive brigade were to operate on the country's heavily trafficked two-lane roads, some of which required substantial earthworks to improve their alignment. The two labor-intensive brigades were to be used primarily for improvement of less heavily trafficked single-lane roads which only required regravelling works and clearing of ditches. Agreement was reached with Government that the operations of the regravelling (equipment-intensive) brigade to be funded by IDA under the project will be complemented by the work of one equipment-intensive brigade to be financed from RB's annual budget. Completion of the project was targeted for October 1982.

(a) Upgrading of St. Michael-Molimo Nthuse Road

3.02 About 29 km of the road between St. Michaels and Molimo Nthuse constructed to gravel standard under the Second Highway project were to be upgraded to double surface bitumen treatment (5m width). Nine contractors were prequalified, but only four submitted bids (two from RSA, one from Botswana and one from Lesotho), because of the small size of the contract. The contract was awarded in October 1980, sixteen months later than the appraisal estimate. There were major delays in the preparation of bidding documents and calling for bids, due to the staff shortages in RB and the lengthy bureaucratic tendering process within Lesotho.

3.03 The contract was awarded to a RSA contractor who started work in November 1980 but ceased operations in February 1981 because of bankruptcy, after only 6 km of reconstruction of the base course had been completed. Following the liquidation order, the Lesotho courts appointed another RSA contractor to continue work on the road on the same conditions of contract, but the contract was terminated by RB in November 1981 due to the

unsatisfactory performance of the second contractor. At this stage, only 9 km of reconstruction of the base course and prime coat had been completed. The Government requested that the road be completed by force account with equipment rented from private firms through PVPS, given that it had already constructed various sections of roads to paved standard. The Association agreed and work on the road was completed in March 1983, ten months later than estimated by RB. The delay was due to (i) the lengthy mobilization period, (ii) lack of sufficient hire plant and transport, (iii) slow progress of the force account unit and (iv) additional works, since it was necessary to reconstruct 7 km of the prime base that had been carried out by contract due to its deterioration in the interim period. Altogether, this component was completed 43 months behind the schedule estimated at appraisal. The actual cost of the completed road was M1.4 million while the bid price was M765,295. The cost overrun was financed from savings in other components.

3.04 Supervision of works undertaken by contract was carried out by British consultants to a satisfactory standard.

(b) Road maintenance

(i) Equipment-intensive brigades

3.05 The project provided for the establishment and operation over a three-year period of one equipment intensive brigade. This equipment-intensive brigade was complemented by a similar Government-financed brigade.

3.06 The IDA financed equipment-intensive brigade did not start operations until June 1981, 18 months later than estimated at appraisal. The major cause for delay was the late procurement of equipment for the brigade, due to (i) lack of qualified RB staff to prepare bidding documents, carry out tender evaluations and award contracts, and (ii) lack of response from suitable EEC suppliers for some items of equipment since all equipment was financed under the EEC Special Action Credit. Graders were finally hired from PVPS since no EEC-based company was willing to supply the required make.

3.07 The output of the brigade was lower than expected during the first six months of operations (5.5 km per month compared to 8.0 km estimated at appraisal). According to RB, the lower output was due to more works than estimated on unmaintained roads; however, the appraisal estimate of productivity was based on substantial earthworks on some roads and construction and clearing of ditches and drainage, but whether it was more than the work experienced on the first road improved by the brigade is not clear. Other reasons for low productivity of the brigade were (i) difficulties in recruiting competent drivers and operators for the equipment due to the low government salaries; and (ii) poor service offered by the local agent for the tipper trucks purchased under the project. It was decided in December 1981 that from April 1982 this brigade would be used for regravelling maintained roads only. The program for the brigade was consequently adjusted so as to include only roads that met this requirement. Productivity of the IDA-funded brigade subsequently increased to 8 km per month. Soon after work started in June, 1981 it became

apparent that the equipment purchased under the project would be insufficient to enable the brigade to function effectively; IDA therefore agreed to the hiring of extra self-propelled rollers, water tanks and tippers for the duration of the project. At the then prevailing exchange rate, it was anticipated that funds under the Credit for this category would run out by early 1984. By December 1983, therefore, operations were slowly wound down in anticipation of shortage of funds from the Credit. However, in August 1984, due to the depreciation of the Maloti/Rand against the US\$, it was found that there were unspent funds so that operations of the IDA-funded brigade were resumed for three months from October to December 1984 to complete the revised program.

<u>Road name</u>	<u>Total length</u>	<u>FY82</u>	<u>FY83</u>	<u>FY84</u>	<u>FY85</u>
B40 Old Hoek-Motsekuoa	88	67	21		
B41 Mafeteng-Thabana Morena	50		50		
B25 Leribe-Pitseng	28		26	2	
B23 Nyenye-Mapoteng	36			36	
B24 Mapoteng-Teyateyaneng	29			19	10

3.08 As a consequence of the additional equipment hired by the brigade (para 3.07), the size of the brigade's equipment fleet practically doubled. While the appraisal had underestimated the number of tippers required (six compared to the ten required) and a few other items, the main reason for increased equipment needs was lower than estimated availability due to poor maintenance and repair by RB. The cost of regravelling was about M 13,050/km (US\$12,000), about 8% higher in real terms than estimated at appraisal which is reasonable given the additional hiring of equipment. However, this cost excludes the depreciation and interest cost of equipment owned by RB, plus the cost of head office staff support and technical assistance.

3.09 The work program agreed on at appraisal for this brigade is shown in Annex 1. Actual output of the IDA-funded brigade was only 231 km compared to the original project target of 300 km over three years because of the slow start-up of the brigade and larger than anticipated quantities of work on individual road sections. The table below shows the program of roads completed by the IDA-funded regravelling brigade.

3.10 Operations of the Government-funded brigade began in May 1980. Its productivity was much lower than estimated because of the low availability of equipment, work on roads in remote areas, and higher than estimated drainage and earthworks. In December 1981, the Association and RB agreed that this brigade would work principally on roads which required extensive earthworks/drainage prior to gravelling. Its work program was changed to ensure this. The cost per km of such operations averaged M 23,000 over the period FY1981-85. RB attributed part of the high cost to the cost of hiring equipment, so that it readily accepted ODA's offer in December 1981 to finance the purchase of equipment for the brigade. The equipment was put into operation between January and September 1983 and additional equipment was also taken over from a basic agricultural special project unit during that period. A total of 188 km of roads were improved over a 46-month period (terminating September 1984) compared with the 300

km of regravelling originally estimated at appraisal. However, from September 1981 to March 1982 the brigade was forced to halt operations because insufficient funds were allocated for the year's work. The table below shows the work program of roads completed by the Government-funded regravelling brigade; the agreed work program at appraisal is shown in Annex 1.

<u>Road name</u>	<u>Total length</u>	<u>FY81</u>	<u>FY82</u>	<u>FY83</u>	<u>FY84</u>	<u>FY85</u>
A25 Ongeluku Nex	16	16				
B36 Qomoqomong	6	6				
A17 Tele Border Post	10	10				
B40 Old Hoek-Mpharane	30		29			
A14 Sani Top-Mapholaneng	45	45				
A1 Mapholaneng-Letseng	23			23		
A27/B271 Khabo-Mata	7			8		
B29 Pitseng-Koasa	25			6	19	
- Mahobong-Ramapepe	8			8		
B27 Khabos-Pelatsoeu	18				9	9

3.11 The activities of the IDA-financed equipment-intensive brigade were continued under the Fourth Highway Project. Its productivity has improved and costs reduced because of increases in efficiency.

(11) Labor-intensive brigades

3.12 Two labor-intensive brigades were to be financed under the project to carry out regravelling works with the assistance of consultants who worked on the pilot project (financed under the Second Highway Project). Brigade 1 was mobilized in April 1980 (three months later than estimated at appraisal), using hired equipment until the delivery of equipment procured under the project. The mobilization of Brigade 2 was delayed until May 1981 (16 months later than estimated) because of delays in the delivery of equipment (para. 3.06) and the lack of senior supervisory staff. The two brigades ceased operations at the end of 1983 when the funds available under the project appeared to be exhausted.

3.13 Brigade 1 achieved an output of about 48 km per year compared with the appraisal estimate of 50 km. However, IDA missions noted the poor quality of work, citing poor quality and an inadequate level of thickness of gravel. The Materials Branch of RB was meant to control the quality of gravel but did not impose adequate controls because of lack of coordination with LCU. The brigade also had additional problems with the non-availability of 0.5-ton hand rollers for hire. Brigade 2 suffered from continual problems throughout the project and did not complete the agreed work program, only achieving an average output of 25 km per year compared with the appraisal estimate of 50 km/year. A major problem was the continual shortage of supervisory staff - a senior technical officer was not appointed until the last year of the project and another technical officer until the last 18 months. There was also difficulty in hiring private tippers in the more remote areas of the country at the fixed rates set by PVPS. With the exception of two roads, none of the roads in the

revised work program were the same as the original program agreed at appraisal. The roads completed by the two brigades are shown below; the agreed work program at appraisal is presented in Annex 1.

<u>Road name</u>	<u>Total length</u>	<u>FY81</u>	<u>FY82</u>	<u>FY83</u>	<u>FY84</u>
<u>Brigade 1</u>					
B45 Mazenod-Moitsupeli	27.5	27.5			
B46 Makhakhe-Raleqheka	35.7	22.0	13.7		
B20 Lancers Gap-Thaba Bosiu	51.8		51.8		
B203 TY-Hateka	16.0			16.0	
B232 Mpharane-St. Theresa	17.0			17.0	
B233 Kolojane-Bela-Bela	7.0			7.0	
B231 Khotsi-Hokong	10.0			0.8	9.2
B26 Libono-Mononotsa	9.3				9.3
<u>Brigade 2</u>					
B34 A4-Tosing	14.0		14.0		
B35 A4-Ha Mosehle	5.0		5.0		
Mt. Moorosi-Mphaki	42.6			25.6	17.0

3.14 Supervision missions noted several problems with LCU, including:

- (i) the generally poor management of the Unit,
- (ii) the hiring of as many people as possible without due consideration for the efficiency of operations,
- (iii) use of labor for quarry stockpiling when plant would have been more efficient,
- (iv) poor choice of hand tools, and
- (v) inadequate route alignment in some cases.

Staffing has continued to be a problem for the LCU since it is not regarded by engineers and technical officers as being part of MOW's "mainstream" operations and therefore are reluctant to join the Unit. In 1987, it still had only one local engineer who was the head of the Unit; there was also a critical shortage of technical officers. Its headquarters is made up of temporary caravans, reinforcing the notion of the "temporariness" of the program. All of the projects undertaken by the Unit are funded by donors, including those under other ministries. The Government provides LCU with funds for maintenance of the roads improved; these funds are used to employ lengthmen wherever possible for the routine maintenance of the roads. Costs for Brigade 1 averaged M7,550/km (US\$8,000) over the period FY1981-84, about 25% lower than estimated at appraisal; however, as noted in para. 3.13 the standard of work was not up to that envisaged at appraisal. Costs for Brigade 2 averaged M13,900/km (US\$13,640) over the period FY1982-84, about 25% higher than estimated at appraisal because of the continual staffing and other problems discussed earlier.

3.15 The LCU has tended to undertake roads identified by RB and has not developed its own capacity to identify and evaluate roads for improvement. Most of the roads have not involved simple regravelling operations but considerable upgrading works, including realignment, widening and improved drainage. There has been little or no consultation with the local rural population and no attempt to coordinate the Unit's activities with rural and other development projects. Labor-intensive operations supported by IDA in other parts of Africa have put far more emphasis on the selection of roads at the local level and coordination with other development projects to help maximize the socio-economic impact of the road improvements. In addition to improving the selection of roads, there needs to be a further assessment of design standards so as to ensure that LCU is not building roads to too high a standard given the relatively low traffic levels.

(iii) Other maintenance equipment

3.16 A few items of equipment were purchased under the project for general maintenance activities, including Bomag rollers, mobile premix machines, radio sets, concrete mixers, plate compactors and rotary compressors. Some of these items were purchased from local suppliers following an amendment to the Credit Agreement allowing the purchase of road maintenance equipment up to US\$100,000 with IDA funds, using local competitive bidding procedures. Workshop equipment for PVPS and office equipment for RB were also purchased under the project.

(iv) Workshops and buildings

3.17 Regional workshops and staff accommodation for PVPS and office buildings for both PVPS and RB were constructed at Leribe, Mohale's Hoek and Mokhotlong. The latter replaced facilities that were to be constructed at Thaba Tseka since it was decided not to make it a regional headquarters in view of the small length of roads maintained by RB in the area and the construction of housing with British funding. Only one office and one house were constructed at Thaba Tseka under the project. Other changes to the project included the construction of a classroom block in Maseru RB headquarters rather than extension of the office block, three offices for design staff, and additional housing at the Maseru regional headquarters for RB staff.

3.18 Construction was to be completed by mid-1980, but because of delays by MOW's Architects Department in preparing design and bidding documents contracts were not awarded until the second part of 1980. There were further delays for the regional RB buildings because of land acquisition problems with the result that construction did not begin until August/September 1981. The last construction contract was not completed until January 1984. Contracts were awarded to local contractors after following local competitive bidding procedures. Most of them performed satisfactorily and only two fell seriously behind the agreed schedule.

(v) Technical assistance

3.19 Roads Branch. The project originally included the financing of one Senior Roads Engineer (Maintenance), one maintenance engineer, four

assistant maintenance supervisors (technicians), one foreman/trainer, and one training officer. However, funding of all of the above personnel, with the exception of the Senior Roads Engineer (Maintenance) and the training officer, was not required because these positions were filled with expatriate engineers financed by other donors. RB and IDA agreed in July 1979 to hire one consulting company to provide the other positions plus a cost accountant for RB and a training officer for PVPS. A French company was selected and the consultants took up their positions in May 1981, 13 months later than estimated at appraisal. The delay was due to the time it took for RB to decide on its staffing requirements and lengthy negotiations with the company selected over the staff to be appointed.

3.20 After guidance from RB, the consultants submitted recommendations on improvements to the maintenance organization, annual maintenance requirements, staff, equipment and budget needs, a road inventory and inspection system, and a cost accounting system for maintenance operations. Field staff were trained in the use of the new cost accounting system, but the system was soon dropped after departure of the consultants because of lack of staff to provide the necessary data and suitable staff to monitor the quality of the data. The system is now regarded as too complex for Lesotho and RB would prefer to try another more simplified system. Similarly, the road inventory system has not been implemented. Training courses were designed by the consultants and are still in use in the RB classroom. Apart from the consulting team, the project also funded a one-year contract for a Projects and Planning Engineer; funding of this engineer continued under the Fourth Highway Project when he became the Senior Roads Engineer.

3.21 PVPS. The original project included the financing of three workshop supervisors to supervise the regional workshops. ODA agreed to finance staff for the headquarters and central workshop in Maseru, including a cost accountant and two mechanical supervisors; Irish aid funded an additional mechanical engineer. After appraisal, the Government decided to try to obtain other donor assistance for the three regional mechanical supervisors but was unsuccessful in its attempts. Therefore, in December 1981 the Government decided to use the funds available under the project to finance a consulting company to provide the three supervisors, as well as two mechanical engineers that were urgently required to improve the operations of PVPS in Maseru. A British consulting company was finally appointed in February 1983, 21 months after two of the mechanical workshops had been completed and nearly four years after the appraisal estimate. During the interim period, the performance of PVPS was very poor so that some of the equipment purchased under the project had to be maintained by the private sector.

3.22 The consultants recommended a reduction in the size of the fleet, including the selling off of equipment before it was too old, removal of responsibility for maintenance of military vehicles, private hiring of special plant, and standardization of equipment. Most of the recommendations have been implemented over the last few years. Recommendations were also made with respect to training, but little training of staff has actually taken place partly because of the continuing shortage of qualified counterpart staff. It was agreed in March 1983 that the consultants also provide a Financial Controller to improve the

financial administration of PVPS. The contract for the consultant team was extended from 18 months to two years and was continued under the Fourth Highway Project.

(vi) Fellowships

3.23 No fellowships had been awarded by December 1981 and an IDA mission requested that a program be drawn up and suitable candidates nominated as soon as possible. However, no candidates had been nominated by the time of the next IDA mission in November 1982. The first candidates were finally selected in December 1982. At least part of the delay in starting the program was the lack of priority given by RB to drawing up a fellowship program and the lengthy Government selection process for candidates. Three candidates were sent for one year Masters degree courses in highway and traffic engineering and two others completed their first year Mechanical Engineering degree courses in the UK; 17 other staff attended short specialized courses in civil engineering, accounting, management and traffic enforcement in various parts of the world. The fellowship program is being continued under the Fourth Highway Project with similar delays.

(vii) Studies

3.24 Proposals for the Oxbow-Mokhotlong road feasibility study were received from four consulting companies - two from the UK, one from France and one from Germany. The French company was selected and the contract signed in December 1980, twenty months later than estimated at appraisal. Delays were due to the staff shortages of RB and the lengthy Government bureaucratic process for the approval of contracts. The study was completed in June 1981 although the final report was not accepted by Government until December 1981. Detailed engineering started in February 1982 and was completed in April 1983, twenty-nine months later than estimated at appraisal.

3.25 Although accepted by IDA at the time, the economic justification for upgrading the road to paved standard was based on extremely high estimates of normal traffic growth and particularly of generated traffic, given the current low traffic levels on the road (10-15 vehicles per day (vpd)) at the time of the study. Generated traffic was projected to be higher than normal traffic the first year the road opened due mostly to a projected 40% increase in the cultivated area within the area of influence of the road; however, to date no such increase in agricultural production has taken place in any area within Lesotho, even after intensive rural development projects. It would appear that the upgrading of the road to paved standard could only be justified on the grounds of regional integration of the remote eastern area with the rest of the country, but the possibility of achieving this objective with a gravel road (with paved sections on the more treacherous mountain passes) should have been more carefully assessed. Financing for upgrading the road to paved standard has recently been obtained from AfDB and Arab donors at an estimated cost of US\$300,000/km and construction is scheduled to start later in 1988.

3.26 Details of project implementation with comparisons of dates of actual completion of project components compared with dates estimated at appraisal are presented in Annex 2.

Project Revisions

3.27 Although there were major changes in the work program agreed on at appraisal, the changes were in conformity with the objective of the project. Only one minor amendment was made to the project description in the Credit Agreement in early 1985 to allow for the purchase of minor items of maintenance equipment (para. 3.16).

Project Costs

3.28 A detailed comparison of project cost estimates at appraisal with actuals is shown in Annex 3. Total actual project costs were US\$11.7 million, 89% of that estimated at appraisal. However, the lower cost is mainly the result of the decline in the value of the Maloti/Rand during most of the years of project implementation. The total project cost in Maloti was M 12.42 million, or 109% of that estimated at appraisal.

3.29 Construction costs for the St. Michaels-Molimo Nthuse road were 19% higher than estimated in US\$ (41% higher in Maloti) because of the bankruptcy of the contractor and the lengthy time taken to complete the road by force account (para. 3.03). The equipment costs for the equipment and labor-intensive brigades and routine maintenance were 27% lower than estimated in US\$ because most equipment was purchased with EEC Special Action Credit funds at a time when the dollar strengthened against major European currencies (during the first two years of project implementation). Operating costs for the equipment-intensive brigade were 16% higher than estimated in US\$ because of the additional equipment hired from PVPS and higher than estimated inflation.

3.30 Costs of RB buildings and office equipment were 9% higher than estimated in US\$ because of changes to the original program; however, the cost of workshops, offices and staff accommodation for PVPS were lower than estimated, at 53% of the original estimate in US\$. There were changes to the technical assistance component of the project with PVPS receiving far more assistance than estimated at appraisal (para. 3.21) and RB far less, but overall the total costs for this component were as estimated at appraisal. The cost of fellowships were 87% higher than estimated in US\$.

Project Financing

3.31 Originally, the EEC was to finance US\$2.2 million (spread over various European currencies) of project costs. However, at the closing date of the EEC component in June 1984, only US\$1.64 had been disbursed as there were little or no response to bid requests from EEC countries for some of the equipment items, and these therefore had to be hired using alternate source of funds (Para 3.06). The EEC financing covered most of the items of equipment procured under the project, both for general maintenance, the equipment and labor-intensive brigades, and the mechanical workshops. In addition, EEC financing covered the Oxbow-Mokhotlong feasibility study. A few items were purchased with IDA funds given problems of procuring specific types of equipment from European suppliers (para 3.16). IDA financed US\$6.859 million of project costs which left US\$2.141 million of surplus funds at the Credit closing date. Most of the

surplus was due to the strengthening of the US\$ during project implementation. A proposal by RB in 1984 to use the surplus funds to rebuild two river crossings in the Mokhotlong area was rejected by IDA as not being part of the original project and of being too expensive anyway.

Disbursements

3.32 Disbursements of the EEC Special Action and IDA Credits were far behind those estimated at appraisal because of (i) the lengthy delays in the implementation of the project Annex 2; (ii) the unrealistic disbursement schedule estimated at appraisal; and (iii) the slow processing of claims by RB and the Treasury. According to the appraisal estimate, 83% of funds were to have been disbursed by October 1981, two years after the project was meant to have started; however, only 6% of funds had actually been disbursed by that date. The start-up time for most of the project components had been substantially underestimated, since most components only began in mid-1981. Only 22% of Credit funds had been disbursed by the estimated appraisal closing date. The IDA credit was finally closed in January 1986, three years later than estimated; the total time to disburse the Credit was about twice of that estimated at appraisal. Unused funds of the IDA Credit amounted to US\$2.141 million. The EEC Special action Credit was closed in June 1984, with US\$0.56 million of unused funds. A comparison of actual disbursements compared with those projected at appraisal is included in the basic data sheet and the breakdown of disbursements by category of expenditure is given in Annex 4.

Procurement

3.33 There were no procurement problems with the project other than the difficulties of obtaining a few specific items of maintenance equipment from EEC suppliers (para. 3.06) and the lengthy bureaucratic procurement process of Lesotho.

Reporting

3.34 Progress reporting requirements were agreed at negotiations. Up to the beginning of 1983, progress reports were submitted behind schedule - often six months after the due date. However, MOW made progress in submitting progress reports on schedule thereafter, but often the reports were incomplete and did not contain sufficient detail. Insufficient or no coverage was given to the status of the implementation of covenants, appraisal and actual implementation timetables for some components, key personnel changes in the staffing of RB and disbursements of credit funds.

IV. INSTITUTIONAL PERFORMANCE AND DEVELOPMENT

Covenants and Borrower's Performance

4.01 Details of the covenants of Credit Agreement 884-LES and Government's compliance with them are given in Annex 5. In general, covenants were adhered to although with some delays at times.

4.02 The major covenants and side letter required adequate budgetary funds to be made available for road maintenance, but the figures given in

the covenants have led to much confusion so that different IDA supervision missions have given different interpretations of whether the covenants were adhered to or not. The figures given in the covenants refer to a budgetary line item, "maintenance of public assets", which does not include most of the wages and salaries of RB staff. However, additional funds for road maintenance have been allocated under another budgetary line item, "counterpart contributions", in order to meet the Credit conditions. If these two line items are added together then the Government adhered to the covenants from FY1979-1983 by increasing maintenance allocations each year to be at least equivalent in real terms to the M 3.0 million specified in a Side Letter to the Credit Agreement. Funding was just below the required amount in FY 1984 and 17% below the required amount in FY 1985. However, according to revised estimates of maintenance expenditure requirements for the Fourth Highway Project in 1984, the maintenance budget was adequate in FY 1985, although it proceeded to decline thereafter.

Performance of Consultants

4.03 Consultants were employed for supervision of construction, strengthening of RB and PVPS, and to carry out a feasibility study. The performance of the consultants providing assistance to RB was somewhat limited due to the high turnover of staff, limited English capability, and little time spent in the field (para 3.19). Unfortunately, not all of the work produced by the consultants proved to be of practical use to RB, especially the cost accounting system (para. 3.20). The consultants who carried out the feasibility study provided an economic justification of the Oxbow-Mokhotlong road which had some fundamental weaknesses which should have been rectified at the draft stage (para. 3.25). Performance of the other consultants was satisfactory.

Institutional performance

4.04 Roads Branch. A major objective of the project was to improve the maintenance organization of RB and overall maintenance operations. During the latter part of the project, maintenance of roads did gradually improve, especially with the arrival of more technical assistance. The backlog of regravelling was reduced although there was still a considerable amount at the end of the project. Routine maintenance of roads improved although earth roads did not receive any maintenance at all (as they still do not), apparently because of lack of funds, although RB has always given higher priority to the bituminized and gravel roads.

4.05 At the end of the project, there were still some fundamental weaknesses in the organization which has continued throughout the Fourth Highway Project. There was no cost-accounting system, no road inventory, no formal methodology for establishing maintenance priorities and budgetary requirements, inadequate supervision and monitoring of maintenance activities, and low levels of productivity. Many of these deficiencies were due to lack of qualified staff and low levels of staff motivation because of very low wages and inability to fire workers for poor performance. As of August 1983, out of a total of 31 professional positions (engineers, assistant engineers and financial controllers), 21 positions were vacant. Similarly, out of a total of 116 sub-professional positions (e.g. technical officers, storekeepers, and supervisors), 47

positions were vacant. The shortage of qualified local engineers is especially serious with only one local engineer as Chief Roads Engineer and the rest expatriate staff. The situation is slowly improving during the Fourth Highway Project, although there are still serious staffing shortages at all levels and heavy reliance on expatriate staff.

4.06 PVPS. Road maintenance depends heavily on the performance of PVFS which is in charge of the procurement, maintenance and repair of equipment, plant and vehicles hired by Government agencies, including RB. Very little improvement took place during the project because of the deteriorating staffing situation increased fleet size, and delays in appointing necessary technical assistance. The fleet size increased from 780 units in 1978 to about 1500 in 1983 while the number of senior management staff decreased from 10 engineers, accountants and supervisors to only two during the same period. The number of mechanics and other trained artisans only increased by 12%, resulting in a high ratio of 30 vehicles/items of equipment to one mechanic. Availability rates were about 64% and utilization only 60% of the time equipment was available.

4.07 The technical assistance team was only in place during the last two years of the project. It began to take measures to reduce the size of the fleet, standardize vehicles and equipment, improve the operations of the Central and regional workshops, and improve accounting procedures. It continues to assist with improving the performance of PVPS throughout the Fourth Highway Project. PVPS still has to improve operations in key areas, especially preventive maintenance and productivity of mechanics and operators. Equipment operators still have an unacceptably low level of productivity; for example, graders only achieve an average of 2.5 km of grading per day when a reasonable output should be at least three times that level. There was also very little training of artisans during the project and training continues to be very limited.

V. ECONOMIC REEVALUATION

St. Michaels-Molimo Nthuse Road

5.01 The economic reevaluation of the paving of the St. Michaels-Molimo Nthuse road is based on the same assumptions as at appraisal. The economic life of the road is taken as 15 years and it is assumed that in the "without project" case the road would be maintained to a good gravel standard. All costs and benefits are in constant 1982 prices. Traffic figures were only available for the first section of the road which has significantly higher traffic levels than the second section because of the different densities of population. The second section climbs into the highlands and has very little population residing within the area of influence of the road. The economic reevaluation has therefore assumed that traffic on the second section is only half of that on the first. The appraisal forecast a 20% generation of light and medium traffic after completion of the project and a 10% growth in total traffic. However, actual traffic counts for the first section of the road indicate that there has been a lower than forecast increase. Total traffic increased by 7% p.a. from 1978 until 1983 - the year of completion of the component - 18% from 1983 to 1984, and thereafter remained fairly constant. Actual traffic figures for 1983 to 1986 were included in the economic reevaluation of the

project and an annual increase of 7% has been assumed for the remaining years. Based on the traffic counts available, the composition of traffic is also different from that assumed at appraisal insofar as cars are now estimated to represent 48% of total traffic and light commercial vehicles 37% as compared to the 64% and 24% estimated at appraisal.

5.02 The reevaluated internal economic rate of return is 15.5% compared to 15% estimated at appraisal. Although the increase in traffic has been assumed to be lower in the economic reevaluation, the rate of return is still close to that assumed at appraisal because of the three year delay in completion of the project which meant that the initial traffic level was higher. Also regravelling cost savings make up a significant percentage of the benefits of the project and these have been estimated to be higher than the appraisal estimate in the economic reevaluation, based on the latest costs available from RB. The detailed re-evaluation is presented in Annex 6.

Road Regravelling Component

5.03 In the absence of a detailed road inventory describing actual road conditions and present traffic levels for all roads, the appraisal report evaluated this component based on average road conditions and traffic counts on (i) one-lane and (ii) two-lane gravel roads. The appraisal economic analysis compared the "with project" situation, in which about 200 km of roads are regravelled annually, with the "without project" case where the roads would receive no more than a minimal level of recurrent maintenance. The appraisal estimated that regravelling of roads with average traffic of 35 vpd for one-lane and 60 vpd for two-lane roads with 10% per annum traffic growth rate would yield satisfactory rates of return of 32% and 58%, respectively. A list of roads to be regravelled were agreed upon with IDA after the appraisal (noted in a Side Letter). Procedures for prioritizing and hence selecting these roads, however, was never clear. Subsequently, the priority of road sections to be regravelled were revised on several occasions, without clear evaluation of their priorities. In actual implementation, it was found that none of the road sections agreed to in the original list nor the subsequent revised lists were actually regravelled. The reasons behind this are explained in para. 3.07. As discussed in para. 5.05 below, however, the lack of procedures for prioritizing regravelling works did not materially affect the effectiveness of the regravelling program.

5.04 In the absence of economic evaluation for each road section and lack of information as to how the road sections were initially selected, the improved road sections were ex post evaluated, based on the following assumptions. The annual 10% growth rate of traffic is the same as that forecast at appraisal. However, the composition of traffic based on actual traffic counts is quite different from that assumed at appraisal. Cars comprise 42% of total traffic compared to 5% at appraisal, light commercial vehicles 33% compared to 55% and heavy vehicles and buses 25% compared to 40%. The lifetime of the regravelled surface has been taken as four years because of the higher traffic instead of the five years assumed at appraisal. Traffic on roads improved by the labor-intensive brigades appear to be the same as estimated at appraisal, i.e. 35 vpd in 1978, but with an 8% annual growth rate, based on counts taken for five roads

improved by the brigades and subsequently included in the Fourth Highway Project for regravelling. The lifetime of the gravel surface has been estimated to be six years instead of the seven assumed at appraisal, based on the findings of the Fourth Highway Project appraisal. The same project also found that the composition of traffic was different from that estimated at appraisal: cars comprised 38% of total traffic, light commercial vehicles 38% and heavy vehicles 24%.

5.05 The ex post economic rate of return evaluation for both the one-lane and two-lane road regravelling programs were found to be satisfactory. For the one-lane road regravelling program using labor-intensive methods, the ERR yields 36% compared to the appraisal estimate of 32%. For the two-lane road regravelling program using equipment-intensive brigades the ERR is 62% compared to the appraisal estimate of 58%. In total, the regravelling program accomplished its objective of substantially reducing the back-log of periodic maintenance works through carrying out regravelling on nearly 30% of the gravel and earth road network. Details of the cost and benefit streams for the economic reevaluation are in Annexes 7 and 8.

VI. ROLE OF THE BANK

6.01 After emphasizing the serious staffing shortages of both RB and PVPS at appraisal, IDA proceeded to draw up a project implementation schedule that was based on assumed well-staffed and efficiently run departments. Even by the time the Credit was presented to the Board, the project was already behind schedule. For example, the bidding documents for the St. Michaels-Molimo Nthuse road were meant to have been completed by the end of 1978 according to the appraisal estimate, but were nowhere near completion by Board presentation in February 1979 (see Annex 2). Given the time it takes to recruit qualified staff in a low salary environment and the crisis-management in the interim period, IDA should have allowed far more time for the preparatory stages of each project component. Similarly, a far more realistic disbursement schedule should have been drawn up, especially given the experience with the previous project (Second Highway Project).

6.02 Given the role the Association played in setting up the labor-intensive operations, far more attention should have been focused on the progress of the LCU. More emphasis should have been put on training, as in other labor-intensive programs supported by IDA in Africa, given the crucial role played by qualified supervisors in the success of such programs. However, there was no specific training program identified at appraisal. It would have been beneficial to have had an ILO or other engineer experienced in labor-intensive methods review the operations of LCU half way through the project in 1982, especially since LCU has tended to use more equipment than other similar programs. Funding of the brigades continued under the Fourth Highway Project and although the supervision and quality of work improved, the program has tended to drift and has no clear objectives.

6.03 When reviewing the feasibility study for the Oxbow-Mokhotlong road, the comments of the Bank's agricultural division should have been

sought vis-a-vis the projected increase in agricultural production. The figures used in the study were based on Government objectives in the sector which have not been realized and had little to do with actual experience of rural development or other projects (para. 3.25).

6.04 The project was timely insofar as it focused on maintenance requirements at a time when the road network was increasing at a rapid pace. Although there is still much room for improvement, maintenance standards in Lesotho are still higher than in many other African countries and maintenance costs are at a comparable level.

VII. CONCLUSIONS

7.01 There were lengthy delays for nearly all project components due mainly to the shortages of RB and PVPS staff, lengthy Government procurement procedures, and unrealistic appraisal schedule. The staffing situation had somewhat improved by the end of the project, although lack of local personnel was still a serious problem because of the lack of suitably qualified engineers in Lesotho. Consequently, RB and PVPS will likely continue to be dependent on expatriate engineers and other professionals over the next several years, especially given the large number of engineers required for the forthcoming Lesotho Highlands Water Project. However, improvements in the educational system in Lesotho could help increase the number of candidates qualified to enter engineering degree courses and eventually increase the number of graduate engineers.

7.02 Technical assistance and the roads improvement program were the components that differed substantially from that envisaged at appraisal. Technical assistance differed from that of appraisal because of the changing requirements of RB and PVPS due to unforeseen changes in the provision of other donor assistance. Costs expressed in Maloti were not substantially different from that estimated at appraisal, although there were significant dollar savings because of the decline in the value of the Maloti against the US dollar.

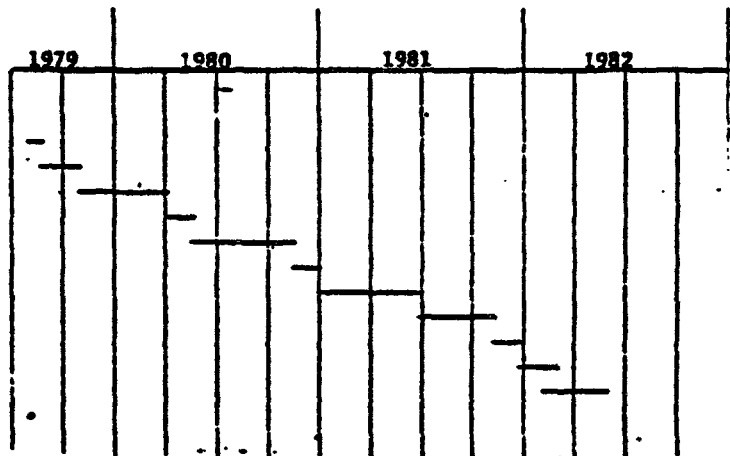
7.03 The project, together with other donor assistance, was instrumental in building up the maintenance organization of RB and PVPS and generally improving maintenance standards. The equipment-intensive regravelling brigade continues to function efficiently and has recently been taken over by local staff. The labor-intensive operations have slowly improved, although the program as a whole now requires an in-depth review. The strengthening of the RB regional organization has resulted in improved routine maintenance, although there continues to be serious staffing problems. PVPS has improved the maintenance and repair of vehicles and equipment, but efficiency and productivity still need to be improved. However, PVPS will face critical staffing problems in 1988 when funding for technical assistance under the Fourth Highway Project will be exhausted and there will be no experienced local engineers to replace the expatriate staff.

LESOTHO
THIRD HIGHWAY PROJECT - CREDIT 884-LES
PROJECT COMPLETION REPORT

Three-Year Road Resravelling Program

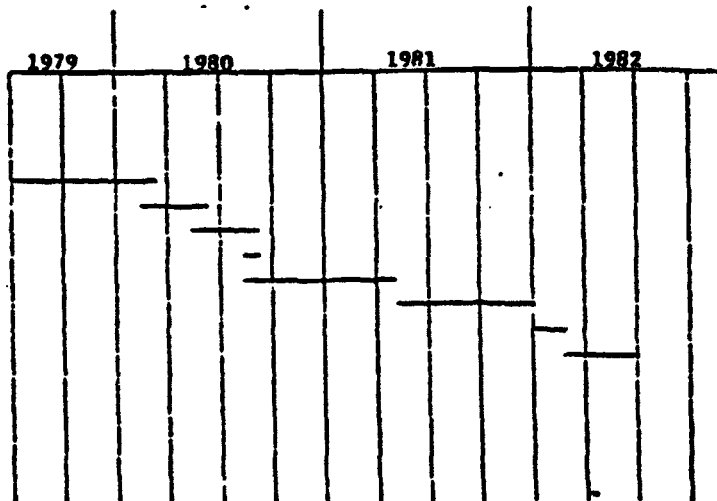
1. Government-Financed Equipment Intensive Brigade:

- Sephapo's - Border Post (12 km)
- Mekhalang - Border Post (4 km)
- Mohale's Hoek - Quthing (47 km)
- Tele Bridge - Border Post (12 km)
- Old Hoek - Mosekwa (66 km)
- Morija - Matsieng (7 km)
- Thabana Morena - Tsoloane (53 km)
- Ramohapi - Ramohlol (40 km)
- Tsupana - Border Post (12 km)
- A4 - Ongeluka Nek (15 km)
- Mpiti-Qacha's Nek - Border Post (14 km)



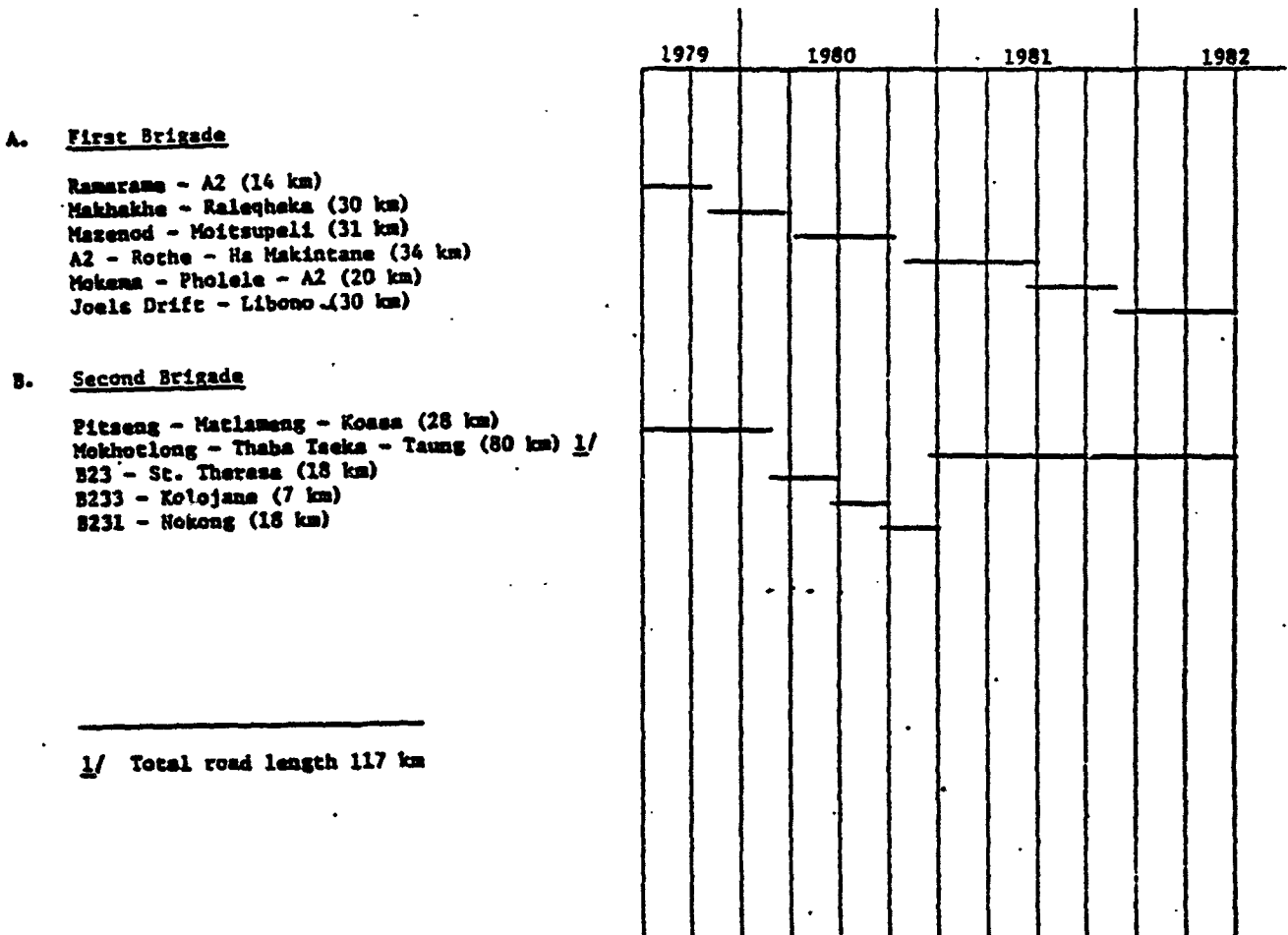
2. IDA-Financed Equipment Intensive Brigade:

- Sefikeng-Lancers (60 km)
- B20 - Mataka (31 km)
- Leribe-Pitseng (27 km) /
- Levisnek-Kwabos (10 km)
- Jolis Drift-Letseng (68 km)
- Letseng-Mokhotlong (44 km) 1/
- Mpharane-Moletsane (37 km)
- Mamathes - B23 (23 km)



1/ Total road length 72 km.

3. IDA Financed Labor Intensive Brigades:



1/ Total road length 117 km

PROJECT COMPLETION REPORT
LESOTHO: THIRD HIGHWAY PROJECT (CREDIT 884-LES)

Actual and Expected Project Implementation

Project Component	Contractor/ Consultant Nationality	Date of Bid Receipt		Date of Contract Award		Date of Beginning of Work		Date of Completion of Work		% of Works Completed by Expected Com- pletion Date
		Actual	Expected	Actual	Expected	Actual	Expected	Actual	Expected	
		Paving St. Michael- Molimo Nthuse road: - construction - supervision	RSA UK	5/80	3/79	10/80 9/80	5/79 4/79	11/80 10/80	7/79 6/79	
Equipment-intensive unit: - equipment purchase - unit operations	Various RB	6/80	2/79	10/80	4/79	6/81	1/80	5/81 12/84	8/79 12/82	0 46
Labor-intensive unit: - equipment purchase - unit operations	Various RB	6/80	2/79	10/80	4/79	4/80	1/80	5/81 12/83	8/79 12/82	0 61
Routine maintenance equip.	Various	6/80	2/79	10/80	4/79			3/85	8/79	0
RB regional offices/accom.	Local	9/80	3/79			3/81	7/79	4/84	6/80	0
PVPS workshops/accom.	Local					9/80	7/79	1/84	6/80	0
PVPS tools/equipment	Various	11/81	2/79					8/82	8/79	0
Technical assistance - RB - PVPS	France UK			4/81 2/83	3/79 3/79	5/81 2/83	4/79 4/79	7/84 7/85	6/82 6/82	33 0
Fellowships	Various					1/84	7/79	6/85	6/82	0
Oxbow-Mokhotlong Road: - feasibility study - detailed engineering	France France	4/80	3/79	12/80	4/79	1/81 2/82	7/79	6/81 4/83	11/80	0 0

Source: Appraisal Report, RB and Supervision Reports.

PROJECT COMPLETION REPORT
LESOTHO: THIRD HIGHWAY PROJECT - CREDIT 884-LES
Actual and Appraisal Project Costs

Project Component	Appraisal Estimate 1/				Actual Cost Estimate 2/				Actual as % of Appraisal Estimate	
	Foreign		Total		Foreign		Total		US\$	Moleli
	<---US\$ '000-->	<---Moleli '000-->	<---US\$ '000-->	<---Moleli '000-->	<---US\$ '000-->	<---Moleli '000-->	<---US\$ '000-->	<---Moleli '000-->		
I. Road Paving										
St. Michaels-Molimo Nthuse road	853	1137	742	989	998	1349	1037	1401	119	142
Supervision of Works	49	78	43	66	62	95	57	87	125	132
Sub-total I	902	1213	785	1055	1060	1444	1093	1488	119	141
II. Improvement gravel/earth roads										
A. Equipment-intensive Brigade										
(i) Equipment purchase	828	872	720	758	840	874	494	520	77	69
(ii) Operating costs	978	2286	850	1988	1084	2643	1237	3016	116	152
Sub-total	1806	3158	1570	2746	1724	3317	1731	3536	106	129
B. Labor-intensive Brigade										
(i) Equipment purchase	144	182	125	132	114	120	87	92	79	70
(ii) Operating costs	1104	2851	980	2305	845	2162	868	2170	82	94
Sub-total	1248	2993	1105	2437	959	2282	955	2262	81	93
Sub-total II	3054	5950	2675	5183	2703	5599	2686	5798	94	112
III. Maintenance Equipment	198	208	172	181	100	105	105	111	50	61
IV. RB Regional Offices/Accommodation										
(i) Buildings, Camps	299	748	260	650	328	814	357	892	109	137
(ii) Office Equipment	66	89	57	60	72	78	70	74	110	123
Sub-total IV	365	817	317	710	398	890	427	966	109	138
V. PVPS Workshops/Accommodation										
(i) Workshops/office buildings	507	1238	441	1075	200	501	204	510	41	47
(ii) Tools and equipment	834	877	725	763	518	545	551	580	82	76
(iii) Staff Accommodation	368	698	320	781	215	538	208	515	60	66
Sub-total V	1709	3012	1486	2619	933	1584	963	1605	53	61
VI. Technical Assistance										
(i) Strengthening RB	871	1078	757	935	622	778	697	871	72	93
(ii) Strengthening PVPS	202	253	176	220	426	533	609	781	211	348
Sub-total VI	1073	1328	933	1155	1048	1311	1306	1652	99	141
VII. Fellowships	54	54	47	47	101	101	155	155	187	330
VIII. Studies (Oxboe-Makhotlang)										
(i) Feasibility study	185	231	161	201	230	287	198	247	124	123
(ii) Detailed Engineering	248	307	214	267	305	381	335	419	124	157
Sub-total VIII	433	538	375	468	534	668	533	666	124	142
TOTAL	7785	13131	6770	11418	6878	11702	7286	12421	89	109

Footnotes

1/ Includes physical and price contingencies.
Currency exchange rate:
Appraisal US\$1.0 = M 0.87

2/ Currency exchange rate:
Average exchange rate taken according to disbursements made each year
Average exchange rate used for each fiscal year (April-March):
FY 1981 US\$1.0 = M 0.83
1982 = M 1.00
1983 = M 1.10
1984 = M 1.25
1985 = M 1.70

PROJECT COMPLETION REPORT

Lesotho: Third Highway Project - Credit 884-LES

Disbursements by Category of Project Expenditure

A. IDA Credit 884-LES

<u>Category</u>	<u>Project Expenditure</u>	
	<u>Appraisal</u>	<u>Actual</u>
Civil works	800	1063.6
Road Improvement:		
- equipment-intensive brigade	1200	1758.9
- labor-intensive brigade	1600	1068.1
Buildings	1900	1354.0
Maintenance equipment/tools	0	64.7
Technical assistance and fellowships	1300	1549.6
Unallocated	2200	
Total	9000	6858.9

B. EEC Credit 2-LES

Maintenance equipment	1000	728.0
Workshop equipment/tools	700	416.0
Consultant services	400	500.0
Unallocated	100	
Total	2200	1644.0

LESOTHO
THIRD HIGHWAY PROJECT (CREDIT 884-LES
PROJECT COMPLETION REPORT

Status of Compliance With Loan Covenants

The Borrower shall, beginning October 1979 or such other date as may be agreed between the Borrower and the Association, start to implement the road regravelling program included in Part B of the Project, annually review and update the said program on the basis of road and traffic conditions and of the Borrower's economic development, and at least three months before the beginning of the following year's program, furnish the said program as updated to the Association for its approval.

Section 3.07 Complied with, although execution of the program was delayed.

The Borrower shall (i) exchange views with the Association, not later than December 31 of each year on budgetary requirements for road maintenance; (ii) allocate for each fiscal year sufficient budgetary funds, (iii) make the budgetary funds required during each calendar quarter available not later than the first day of such quarter for the exclusive use of RB.

Section 4.02 (c) (i) Complied with.
(ii) Complied with except for the last year of project implementation (para 4.02).
(iii) Not fully complied with during implementation of the project, although more funds were released during the last two years of project implementation.

To prepare annual routine maintenance program and maintain the gravelled roads in accordance with engineering practice.

Section 4.02 (b) Complied with.

To take action to ensure that dimensions and axle loads of vehicles are consistent with structural and geometric design standards of roads.

Section
4.04

A program for enforcement of traffic regulations was prepared but not implemented during the project because of delays in installing permanent weighbridges. However, overloading is not thought to be a serious problem in Lesotho.

To provide a minimum of M3,000,000 in FY1979 for road maintenance and to take into account any changes in equipment rental rates as well as other cost increases and changes of RB's road maintenance activities for establishing the maintenance budget over the following years.

Side
letter

See Section 4.02 (c).

To review FVPS rental charges and to communicate its findings to the Association for its comments not later than May 31, 1979.

Side
letter

Complied with.

PROJECT COMPLETION REPORT

LESOTHO: THIRD HIGHWAY PROJECT - CREDIT 884-LES

Appraisal Economic Reevaluation

St Michaels-Molimo Nthuse Road

(Maloti '000) 1/

Year	Capital Cost	Maintenance Savings 2/	Vehicle Operating Cost Savings 3/	Net Benefits
1980	149			-149.0
1981	162			-162.0
1982	815			-815.0
1983	233	243.1	74.0	84.1
1984		13.0	115.1	128.1
1985		243.1	111.2	354.3
1986		13.0	115.6	128.6
1987		243.1	123.7	366.8
1988		-226.8	132.4	-94.4
1989		243.1	141.6	384.7
1990		13.0	151.5	164.5
1991		243.1	162.1	405.2
1992		13.0	173.5	186.5
1993		243.1	185.6	428.7
1994		-226.8	198.6	-28.2
1995		243.1	212.5	455.6
1996		13.0	227.4	240.4
1997		243.1	243.3	486.4

Internal economic rate of return 15.45 %

-
- 1/ Economic costs in 1982 prices
 - 2/ Based on appraisal assumption of resealing every six years, regravelling every two years and grading every 90 days.
 - 3/ Based on traffic counts for 1983-1986 and 7% p.a. growth thereafter.

PROJECT COMPLETION REPORT

LESOTHO: THIRD HIGHWAY PROJECT - CREDIT 884-LES

Appraisal Economic Reevaluation

Road Improvement Program

Equipment-intensive Brigade

(Maloti '000) 1/

Year	Capital Cost 2/	Maintenance Costs 3/	Vehicle Operating Cost Savings 4/	Net Benefits
1980				
1981	908			-908.0
1982	1087	13.5	476.7	-623.8
1983	1060	37.8	1465.3	367.5
1984	586	55.9	2389.1	1747.2
1985		62.4	2931.0	2868.7
1986		48.9	2530.2	2481.3
1987		24.6	1396.0	1371.4
1988		6.5	404.3	397.8
1989			280.0	280.0

Internal economic rate of return 61.72 %

- 1/ Economic costs in 1982 prices.
- 2/ Includes cost of equipment and operating costs of equipment-intensive brigade, and part of technical assistance and regional buildings/workshop project component costs.
- 3/ Difference between routine maintenance costs of good gravel road and poor gravel road.
- 4/ Based on assumption of average of 80 vpd in 1979 with 10% p.a. growth. Voc difference between good gravel road and poor gravel road.
- 5/ Residual value of workshop facilities.

PROJECT COMPLETION REPORT

LESOTHO: THIRD HIGHWAY PROJECT - CREDIT 884-LES

Appraisal Economic Reevaluation

Road Improvement Program

Labor-intensive Brigades

(Maloti '000) 1/

Year	Capital Cost 2/	Maintenance Costs 3/	Vehicle Operating Cost Savings 4/	Net Benefits
1980	398			-398.0
1981	966	17.4	157.7	-825.6
1982	748	53.6	524.6	-277.0
1983	626	87.4	925.1	211.7
1984		111.4	1275.0	1163.6
1985		111.4	1371.3	1259.9
1986		111.4	1483.5	1372.1
1987		94.0	1353.4	1259.4
1988		57.8	898.9	841.1
1989		24.0	402.1	378.1
1990			70.0 5/	70.0

Internal economic rate of return 36.06 %

- 1/ Economic costs in 1982 prices.
- 2/ Includes cost of equipment and operating costs of labor-intensive brigade, and part of technical assistance and regional buildings/workshop project component costs.
- 3/ Difference between routine maintenance costs of fair gravel road and earth road.
- 4/ Based on assumption of average of 35 vpd in 1979 with 10% p.a. growth. Voc difference between fair gravel road and earth road.
- 5/ Residual value of workshop facilities.