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Agency for International Development
Washington, D.C. 20523

PROJECT PAPER

Proposal and Recommendations
For the Review of the
Bilateral Assistance Subcommittee

LESOTHO - SOUTHERN PERIMETER ROAD

AID/BAS-006

UNCLASSIFIED

DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

UNCLASSIFIED

AID/BAS-006

June 19, 1978

MEMORANDUM FOR THE BILATERAL ASSISTANCE SUBCOMMITTEE

SUBJECT: Lesotho - Southern Perimeter Road

Attached for your review are recommendations for authorization of a grant to Lesotho (the "Cooperating Country") of not to exceed Twenty-Six Million United States Dollars ($26,000,000) to help in financing certain foreign exchange and local currency costs of goods and services required for the project.

No meeting has been scheduled for this grant proposal; however, your concurrence or objection is requested by close of business on Tuesday, June 27, 1978. If you are a voting member, a poll sheet has been enclosed for your response.

Bilateral Assistance Subcommittee
Office of Policy Development and
Program Review

Attachments:
Summary and Recommendations
Project Analysis
Annexes A - K

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001

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT PAPER FACESHEET

1. TRANSACTION CODE: A (A = ADD, C = CHANGE, D = DELETE)

PP

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10. ESTIMATED COSTS ($000 OR EQUIVALENT $1)

A. FUNDING SOURCE	FIRST FY B. FX	FIRST FY C. L/C	FIRST FY D. TOTAL	LIFE OF PROJECT E. FX	LIFE OF PROJECT F. L/C	LIFE OF PROJECT G. TOTAL
AID APPROPRIATED TOTAL						
(GRANT)	124		124	25000	3	25000
(LOAN)						
OTHER U.S. 1.						
OTHER U.S. 2.						
HOST COUNTRY		61	61	2474.3	3025.7	5500
OTHER DONOR(S)						
TOTALS	124	61	185	28474.3	3025.7	31500

11. PROPOSED BUDGET APPROPRIATED FUNDS ($000)

APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE C. GRANT	PRIMARY TECH. CODE D. LOAN	E. 1ST FY 78 F. GRANT	E. 1ST FY 78 G. LOAN	H. 2ND FY ___ I. GRANT	H. 2ND FY ___ J. LOAN	K. 3RD FY ___ L. GRANT	K. 3RD FY ___ M. LOAN
(1) SA	900	821		25000					
(2)									
(3)									
(4)									
TOTALS									

A. APPROPRIATION	N. 4TH FY ___ O. GRANT	N. 4TH FY ___ P. LOAN	Q. 5TH FY ___ R. GRANT	Q. 5TH FY ___ S. LOAN	LIFE OF PROJECT T. GRANT	LIFE OF PROJECT U. LOAN
(1) SA					25000	
(2)						
(3)						
(4)						
TOTALS						

12. IN-DEPTH EVALUATION SCHEDULED: MM 09, YY 86

13. DATA CHANGE INDICATOR. WERE CHANGES MADE IN THE PID FACESHEET DATA, BLOCKS 12, 13, 14 OR 15 OR IN PRP FACESHEET DATA, BLOCK 12? IF YES, ATTACH CHANGED PID FACESHEET.

2 (1 = NO, 2 = YES)

14. ORIGINATING OFFICE CLEARANCE

SIGNATURE: John H. Kean

TITLE: Regional Development Officer, OSARAC

DATE SIGNED: MM 01, DD 22, YY 78

15. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION: MM, DD, YY

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SOUTHERN PERIMETER ROAD PROJECT

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PROJECT PAPER
LESOTHO SOUTHERN PERIMETER ROAD
PROJECT NUMBER 690-0076

I. Summary and Recommendations

A. Recommendation

Authorization of a grant of $26,000,000 for the project, subject to the following waivers and approvals:

-- Waiver of the policy set forth in Handbook 11 limiting employment of nationals from non-eligible source countries to 20 per cent of the non-local work force.

-- A procurement source and origin waiver from AID Geographic Code 941 to Code 935 for procurement of a limited amount of construction materials.

B. Project Description

1. Scope

The project will consist of the design and construction of the Southern Perimeter Road from Qacha's Nek in southeastern Lesotho to Quthing in the western lowlands (approximately 155.1 kilometers), and the design only of that portion of the road north from Quthing to Mohale's Hoek (approximately 50.3 kilometers). Approximately 101 kilometers of the road to be constructed under this project will be built to two-lane gravel (Gravel 1) standards and approximately 54 kilometers will be built to paved (DBST) standards. The project responds to an emergency UN-sponsored appeal for donor assistance to help the Government of Lesotho face economic repercussions stemming from their steadfast refusal to recognize the "independence" of the South African homeland Transkei. The new Transkei Government now controls three border gates with Lesotho and has made the use of roads through Transkei and South Africa increasingly difficult, impolitic and unreliable for Lesotho citizens. Traditionally, Basotho (the people of Lesotho) in Southeast and Southern Lesotho cut off by road from Western Lesotho for much of the year, have depended on the South African town of Matatiele for provision of supplies and marketing of produce via these three border posts. The project will upgrade the Southern

Perimeter Road to all-weather and economically justifiable standards. The present condition of the road is such that even a short rain can render it impassable due to its slippery surface, poor drainage, rock falls, and because of inadequate fords used for stream and river crossings. During the 4-6 month rainy season, the road is virtually closed. The improved road will not only decrease dependence on the Transkei border posts and the South African transport network, but will allow Southern and Southeastern Lesotho to be opened up to accelerated development programs and will integrate those regions more fully with the national economy of Lesotho. The GOL calls this project its highest priority development project.

2. Project Costs

AID will finance -- most foreign exchange costs of an A&E contract for final design/construction supervision (Code 000) and a contract for road construction (Code 941). The cost of the total project is estimated $31,450,300, of which AID will provide $25,950,300 (rounded to $26 million). The GOL will provide $5 million to finance contractor local costs and the FX costs of some contractor procurement in South Africa. The GOL will also contribute approximately $500,000, mostly in-kind, for GOL local support to the project costs not channeled through the contractors. Approximately 90% and 70% of final design/construction supervision and construction costs, respectively, will be U.S. costs.

C. Summary of Findings

The analyses found in Sections III and IV of this PP confirm that the project is appropriate for AID/W approval for the following reasons:

-- The project is technically sound. Proposed engineering standards have been reviewed and approved and project cost estimates have been deemed reasonable by AID engineers, satisfying 611(a) requirements.

-- The project is economically viable with an estimated Internal Rate of Return (IRR) of 17.2%, well above the social opportunity cost of capital in Lesotho (10-12%).

-- Potential environmental effects have been studied in an Environmental Assessment (EA) and measures have been incorporated into the project design (at considerable cost) to alleviate all significant adverse environmental effects. The EA concluded that on balance, if such steps were taken, the project would have a positive effect on the environment.

-- The project feasibility study and the Environmental Assessment concluded that the project will have no substantial negative effects on the social structure of the region and will have some clearly positive effects.

-- The GOL Ministry of Works has the capacity to manage host country contracts for project implementation. AID field staff is adequate to carry out AID Project monitoring responsibilities.

-- Taking into account commitments by the GOL to provide adequate financial resources to maintain the project road and the likelihood of AID and/or other donor suppor for projects to improve Lesotho's road maintenance capability, Section 611 (e) of the FAA has been certified by the appropriate AID official in Southern Africa.

II. PROJECT BACKGROUND AND DETAILED DESCRIPTION

A. Background.

The Southern Perimeter Road connects the town of Qacha's Nek in southeast Lesotho and the district of the same name to Quthing in the more developed western lowlands of Lesotho and ultimately to the capital at Maseru. Although the present road is the only means of internal access from southeastern and southern Lesotho to the lowlands, it is little more than a single-lane earth track along its entire 209.3 kilometers. The surface condition of the road between Quthing and Qacha's Nek is such that even a short rain can render it impassable due to its slippery surface, poor drainage, rockfalls and because of unpaved fords used for stream and river crossings. During the 4-6 month rainy season in Lesotho the road is virtually closed.

A Lesotho Transportation Study prepared by Roughton and Partners in March 1974 recommended the upgrading of this key arterial link during the Second Development Plan period (1975/6-1979/80) as part of a nationwide road improvement program. Justification for improving the road was based on opening up southern and southeastern Lesotho to accelerated development programs, more fully exploiting their economic potential and on integrating those regions more fully into the national economy of Lesotho. However, with the "independence" of the Transkei homeland in 1977 improvement of the Southern Perimeter Road became Lesotho's highest priority development project. Lesotho has joined the rest of the world's nations in not recognizing Transkei but alone has faced economic repercussions due to its steadfast position of non-recognition. Traditionally Basotho (the people of Lesotho) in southeast and southern Lesotho, cut off by road from western Lesotho for much of the year, have depended on the South African town of Matatiele for provision of supplies and marketing of produce via the border gates at Qacha's Nek, Rama's Gate and Ongeluk's Nek. Also travellers between this region and western Lesotho usually traveled on modern South African highways, which though longer in distance were faster due to the poor state of the Southern Perimeter Road. These three border gates are now under the control of the Transkei Government which has made the use of roads through Transkei and South Africa increasingly difficult, impolitic and unreliable.

In addition, as the friction between the countries increases, the incidents of South African harassment of travelers also increase. These incidents have taken the form of delays, insults and even detention of citizens of Lesotho transiting South Africa.

The policy of the Transkei regarding the need for visas for Lesotho citizens has changed several times, and may well continue to change. Lesotho citizens currently must obtain a visa before applying for entry at the border of Transkei. Since the Basotho from the

southeastern area cannot travel to a Transkei consulate in South Africa without passing through the Transkei, they must apply by mail and wait several weeks for their visas. Recently Transkei has announced it will only accept visas stamped in international passports, since very few Basotho have international passports, this has rendered travel through Transkei even more difficult. Transkei visa and passport requirements have effectively cut them off from the rest of Lesotho except for travel by air or by road when the present road track from Qacha's Nek to Quthing is passable.

No country wants to force its people to travel through areas where safety and security cannot be guaranteed, or where they will be subject to racial harassment. The need for internal communications is essential in any country but is even more critical for a country like Lesotho bordered by the Republic of South Africa, a racially hostile country, and the Transkei, a country that no other nation recognizes except its creator - South Africa.

A special UN Mission to southern Africa in January-February 1977 led by UN Assistant Secretary General Abby Farah reviewed the impact of Transkei "independence" on the Lesotho economy and recommended upgrading of the Southern Perimeter Road as its first priority project for Lesotho. A follow-up UN Mission to Lesotho in March, 1978 has recommended additional donor support to the regions of Lesotho most affected by Transkei "independence" including donor financing for feeder roads into inaccessible areas from an upgraded (they assume) Southern Perimeter road.

The construction of an all-weather road in this area will not only enhance the unhindered movement of people within the country, but also will facilitate the movement of goods and delivery of social services. The Government of Lesotho has announced that special efforts will be made to accelerate development activities in southeastern and southern Lesotho. The transport of materials for development projects will be made easier and cheaper by an improved, all-weather road, and the farmers will be able to transport their produce more easily to Maseru and other centers for marketing. An upgraded Southern Perimeter road is a sine qua non for efforts to protect residents from the economic repercussions of Transkei "independence" and to accelerate development activities in the region.

In response to the Farah Mission report and a GOL request to the United States Government for assistance in upgrading the road on an "emergency" basis, an AID team carried out an initial reconnaissance and assessment of the road from Mohale's Hoek to Mpiti in March 1977. Their report, entitled Lesotho Roads Assessment, was approved by AID/W as a PID in May 1977. AID then engaged Louis Berger International, Inc. to carry out a full Feasibility Study of the road including a small 10 Km. segment from Mpiti to Qacha's Nek. Given the emergency nature of the project the Feasibility Study was telescoped into a ten

week period (January 9 - March 20) for field work and preparation of a draft final report. Field work was carried out satisfactorily with major assistance from the GOL. The draft report was reviewed immediately thereafter in Lesotho by AID/W, REDSO and OSARAC officials as well as the GOL and the final report was prepared by Berger in southern Africa and handed to AID and the GOL in late April. Continuing along this accelerated design schedule, work on this project paper was initiated simultaneously with receipt of the draft report and the PP was submitted to AID/W in late May.

A Commerce Business Daily (CBD) notice for final design and engineering supervision for the project will be published in June (with a proviso that funds have not yet been authorized for the project) and it is anticipated that a contract for final design can be signed shortly after a project agreement is finalized. The AID response to this emergency request has been timely and effective to date.

In brief, based on the results of their technical and economic analyses, the Berger Feasibility Study recommended that the road from Mohale's Hoek to Qacha's Nek be upgraded to the country's highest gravel standard (Gravel 1) at a minimum and ideally to a paved standard (DBST) for its total length.

Berger's cost estimates for a road built to these standards varied from approximately $46 million for a completely paved road to approximately $33 million for a road built to gravel standards. Berger rejected the recommendations of the AID road assessment for upgrading the road to Gravel 2 and Gravel 3 standards (one lane). Based on a review of the Berger traffic analysis, OSARAC and REDSO agreed that paving was not warranted for the segments of the road (110.7 Km.) between Mount Moorosi and Mpiti except for gradients over 10% and paving through major towns, but did support Gravel 1 standards for those segments and paving the remainder of the road. Construction to lesser standards would result in extremely high GOL maintenance costs in future years. Under this option the project costs would be approximately $39.4 million. Since only $25 million had been budgeted by AID for the project, it was decided to limit the project to the area between Quthing and Qacha's Nek. The 50.3 Km. segment between Mohale's Hoek and Quthing is a two-lane road in relatively good condition, is not essential to the project objective of ensuring all-weather access from Qacha's Nek to the western lowlands, and with a high economic return, should attract other donor funding. The cost of building the Quthing-Qacha's Nek road to standards warranted by traffic projections is approximately $31 million. As part of the project, AID will finance final design of the Mohale's Hoek - Quthing segment concurrently with design of the Quthing - Qacha's Nek segment. This will allow timely construction of the former segment, possibly by a single construction contractor, if other donor funds

(or additional AID funds) become available in FY 1979 and will partially fulfill AID's earlier commitment to upgrade the Southern Perimeter Road beginning at Mohale's Hoek. In addition, the project includes $120,000 for reinforcement of the 100 year old Seaka Bridge over the Senqu (Orange) River north of Quthing. Initial study has indicated that the bridge will not support the heavy trucks expected to travel between Maseru and Qacha's Nek without repair and reinforcement. Absence of rapid remedial action could jeopardize achievement of the basic project objectives of providing access from Qacha's Nek to the western lowlands including the main economic center and capital, Maseru.

Additional savings to AID would result from graveling rather than paving the 54 kilometers of the Quthing - Qacha's Nek road which warrant paving. However, by doing so, AID would severely burden the Government of Lesotho by requiring extremely high annual maintenance expenditures in return for limited capital cost savings by AID. One major and numerous minor recommended realignments will reduce the length of the Quthing - Qacha's Nek road from 209.3 to 155.2 Km. Several construction strategies (U.S. Contractor, U.S. Contractor with TCN Waiver, International Contractor (Code 935), Force Account and combinations of the above) were evaluated. The lowest cost strategy for any of the road standards analyzed calls for construction by an international contractor; however, if a TCN waiver is approved (which this paper recommends) then a U.S. contractor is but two percent more expensive. The Internal Rate of Return for the road is a relatively high 17.2 %. The cost of final design/engineering supervision and construction for the road is estimated at $31,591,200 over a six year project life. These costs include costs for erosion control measures incorporated into road standards which will ensure that road construction and the improved road itself will not lead to degradation of the environment.* An Environmental Assessment, also carried out by the Berger team, concluded that if the erosion control measures noted above were undertaken and if steps were taken to prevent destruction of archeological and paleontological features of the region then the project "would not only reduce the negative aspects of the road to negligible proportions, but would provide a net positive benefit of considerable importance".

The Berger Feasibility Study, at AID's request, also recommended a road maintenance training program for the Ministry of Works. This ancillary activity and other possible assistance for road maintenance in Lesotho will be considered by OSARAC as a possible FY 79 bilateral project after review of a nationwide road maintenance study financed by the African Development Bank. This study should be available by May, 1978.

* These costs are not negligable. For example the costs of hydro-seeding to protect soils exposed along cuts from erosion are estimated at $866,000 excluding price and physical contingency.

B. Detailed Description

Goal: The sector goal under which this project is subsumed is to develop a basic national road transport network in Lesotho which will facilitate economic development and national economic integration and which will ensure all weather access to all regions of the country without resort to travel through South Africa.

In the absence of country wide rail or water communications, Lesotho is heavily dependent on road transport for passenger and freight movements. At Independence in 1966 Lesotho inherited only a few kilometers of bituminized and all-weather gravel roads all in or around Maseru. During the first ten years of Independence the basic road network expanded slowly. In 1975 virtually all the paved and one or two-lane gravel roads in Lesotho, some 1068 kilometers (excluding tracks), formed an arch through the western lowlands starting at Butha-Buthe in the north and running inside the western border down through Leribe to Maseru and then south to Mafeteng and Mohale's Hoek.

There is no all-weather road from Mohale's Hoek across the south to the eastern border town of Qacha's Nek, nor is there such a road across the center of the country through Thaba-Tseka or around the northern edge via Oxbow and Mokhotlong. A bad track leads southeast from Roma, just east of Maseru, to Semonkong but there is nothing - not even a track - from there southeast across the mountains to Sekake's on the Senqu (Orange) River. No all-weather roads of any description exist in the eastern part of Lesotho. For a large part of the population in the highlands pack-animal transport still is the major means of freight movement, including the movement of two important export products, wool and mohair, both locally and over medium or long distances. The above summary of current road conditions may be viewed on Map 3 in Annex V-D.

In 1974 a national transportation study was completed by Roughton and Partners, Ltd. Based on their recommendations the GOL decided to construct or reconstruct within the next four years eight basic segments of the national network totaling 1000 kilometers to varying standards, but none less than all-weather.

Due to the obvious need for basic transportation infrastructure throughout the country donors have responded positively to GOL requests for project assistance as indicated by the following table. If built, these road segments will provide a complete basic all-weather road network for Lesotho.

TABLE II-B-1

Proposed Lesotho Road Network

Name	Length (Kms.)	Old Standard	New Standard	Prospective Donor
Roma-Ramabanta-Semonkong-Sekake's	154	Unengineered track + non-existent beyond Semonkong	One-lane gravel	Germany (FRG has agreed to improve road to Ramabanta, study feasibility of improvement to Semonkong and of buildin new road to Sekake's).
Thaba-Tseka to Mpiti via Taung	161	Food-aid track + one-lane gravel (last 33 km.)	One-lane gravel	Canada (Feasibility stud scheduled for June, 1978
Leribe-Oxbow	95	Rough narrow gravel	Bitumen	IBRD and AFDB
Mafeteng-Mohale's Hoek	49	Two-lane gravel	Bitumen	EEC, U.K. Netherlands
Mohale's Hoek - Quthing Qacha's Nek	205	One lane gravel and track	Bitumen and two-lane gravel.	U.S.A.
Taung-Mokhotlong	89	Food-aid track	One-lane gravel	U.K.
Mokhotlong-Oxbow	118	Single-lane track	One-lane gravel	
Mountain Road (St. Michael's-Thaba Tseka)	147	Rough, narrow gravel	Two-lane gravel (GOL has now requested IBRD to pave part of this road due to major increases in traffic on upgraded section of the road)	IBRD and UK

(See also the summary of the proposed road network on the Map __ in Annex VD)

Project Purpose: The purpose of the project is to upgrade the basic transportation link between Qacha's Nek and the western lowlands of Lesotho. Such a link is a sine qua non for efforts to protect residents of the southeastern and southern regions [redacted] from the economic repercussions of Transkei "independence" and to accelerate development activities in the region.

End-of-Project-Status:

1. GOL able to provision Qacha's Nek and Southeastern Lesotho decreasing dependence on Transkei border stations and on the South African transportation network.

2. Improved access to southeastern and southern Lesotho better integrating these regions into Lesotho's economy and providing stimulus for increased GOL efforts to develop the resources (natural and human) of those regions.

The Southern Perimeter Road is a most critical link in the Lesotho road network and, with the added international political implications of Transkei Independence, has become the Lesotho Government's first priority development project. An upgraded road will provide all-weather access to an economically important yet under-developed and under-privileged region of the country. It will allow the unimpeded transport of supplies, including agricultural inputs, from the western lowlands into the southeastern and southern regions and the movement of produce such as wool and mohair from those regions to domestic and international markets, relieving the effects of border closures and reducing opportunities for harassment of Basotho travelers by Transkei and South African authorities. Finally, as discussed in the economic analysis section of this paper, the road will enable accelerated development activities to be initiated more fully exploiting the important potential for tourism and agricultural development in the road's zone of influence.

History of the Road: The Southern Perimeter Road could have been called the Senqu River Valley Road because its principal function has been to provide access between villages in and along that valley with other towns in Lesotho on the one hand, and with market towns in the RSA on the other hand. The presumed historical development of the road to meet these needs can be described in terms of four segments of the road.

The road from Quthing north to Mt. Moorosi closely follows the course of the Senqu River and becomes quite mountainous. Construction of this road was probably due to the need to supply troops engaged in the long siege of Mt. Moorosi in 1879. Roads connect both Quthing and Mohale's Hoek to the north with Zastron in the RSA and the heavy traffic on these roads under normal conditions confirms the

economic dependence of the Mohale's Hoek-Quthing area on the nearby RSA town.

At Mt. Moorosi, the road followed the left bank of the Quthing River on its way to the border at Ongeluk's Nek. At that point it met a road leading to the railhead and market town of Matatiele in the RSA.

Also in the late 19th Century, a road was built west from Qacha's Nek to Sekake's/Patlong to serve the livestock rich upper Senqu Valley and to provide an outlet to Matatiele, to which the entire area was linked economically. This road was built along the left bank of the Senqu and is also mountainous. At this time, the entire area served by the road was dependent on Matatiele for supplies and as a market for its produce.

The gap between Sekake's/Patlong and the Mt. Moorosi/Ongeluk's Nek road was filled relatively recently by a food-aid track running overland from Sekake's to a point near Makoae on the Mt. Moorosi/Ongeluk's Nek road. By joining the road at this point, the traveler from Mphaki, Sekake's and further east had the option of going either to Mt. Moorosi or to the RSA via Ongeluk's Nek. The traveler moving east from Mt. Moorosi also had the option of going to the RSA or to Qacha's Nek. This orientation of the road accounts for the long, time consuming diversion or loop toward Ongeluk's Nek on the present road.

With the recent emphasis on the most direct and economical connection between Quthing, Qacha's Nek and Maseru, a more direct alignment by-passing the southern loop has been delineated. It leaves the present road near Mt. Moorosi and goes directly east to Mphaki. This will save over 30 Km. on the Mt. Moorosi/Mphaki section. The MOW will continue to maintain the by-passed loop to its present standards. This realignment plus a number of other smaller ones will cut over 54 Km. from the present distance (approximately 210 Km.) between Quthing and Qacha's Nek. (See Figure 1 Annex V-D).

<u>The Project Road and Connections with the RSA</u>: This road is the key link in the proposed national network that will reduce dependence of southeastern and southern Lesotho on the Transkei border posts, RSA roads and on the nearby RSA towns. It will not substantially reduce the region's ultimate dependence on South African produced commodities since neither Lesotho nor other neighboring countries produce these items. This dependence could only be reduced by import substitution production of these commodities. The Senqu Valley Road and Southern Mountain Track, to be improved under this project, runs from Quthing through Mt. Moorosi and Sekake's to Qacha's Nek.

Although it may be possible to negotiate these roads in the dry season with a two wheel vehicle, a four wheel drive vehicle is essential in the rainy season and advisable at all times. The roads may be cut by heavy rainfall and are subject to collapse from landslides. Transport to much of the interior of the country is still by small aircraft or by horseback.

A branch of the South African railway enters Maseru and is Lesotho's main source of bulk supplies such as petroleum products. Other railheads near Lesotho are at Ficksburg, Fouriesburg, Wepener, Underberg, Zastron and Matatiele. The latter two serve the zone of influence of the Soutern Perimeter Road. It will be noted (Table III-B2) that the proportion of goods by tonnage entered through these two posts is only slightly less that the zone's proportion of Lesotho's population.

The RSA, in an astute move to keep its rail system from suffering the deterioration of the U.K. and U.S. rail systems, requires that all freight hauled over 30 miles (with limited exceptions) be hauled by rail. Virtually all inports to Lesotho have a rail haulage segment. RSA towns along Lesotho borders benefit by cheaper rail rates than for freight consigned to Lesotho. Consequently these market towns are very competitive with Lesotho market towns.

There is a national bus service serving the western lowlands supplemented by numerous private buses and taxis. Bus service, and many buses are built on truck chassis giving greater clearance over rough roads. South African Railways runs bus services from the railheads to the border towns. Services outside the lowlands are slow, infrequent, uncomfortable, subject to a high risk of breakdown, and relatively expensive.

Because of the gaps in the road system in Lesotho, areas within and near its perimeter are oriented for trade and commerce toward the nearest RSA towns, resulting in a series of Lesotho enclaves tied to RSA towns. Furthermore, movement between some towns in Lesotho (except those including and between Mafeteng and Leribe) is faster and less wearing for vehicles if they use the RSA roads that skirt the borders of Lesotho. If use of these roads is interdicted by closure or administrative delays at border points, the economy of Lesotho will undergo a great strain. The problem is more complex for the Lesotho citizen who wants to leave his country through Tele Bridge, Qacha's Nek, or Ramats'eliso's Gate to go to a South African mine, for example. If he enters Transkei by these border posts he can only leave Transkei to enter the RSA legally through either Kei Bridge or Umzimkulu. Neither is possible because of the fragmentation of the Transkei. Furthermore, entry into Transkei at the points named above has been closed to

TABLE II- B-2

EXTERNAL TRADE

BY ENTRY POINT, 1970

Town in RSA or Railhead	Border Post	Imports (MT)	%	Exports (MT)	%
Maseru	Maseru	131,000		8,600	
Ficksburg	Ficksburg Bridge	80,000		8,000	
Wepener	Van Rooyen's Gate	34,800		11,800	
Underberg	Sani Gate	6,320		465	
Sub Total		252,120	77%	28,865	85%
Zone of Influence					
Zastron	Makhaleng Bridge	22,600		1,400	
zastron	Tele Bridge	28,300		2,400	
Matatiele	Ongeluk's Nek	2,500		100	
Matatiele	Qacha's Nek	17,400		1,000	
Matatiele	Rama's Gate	4,500		250	
		75,300	23%	5,150	15%
TOTAL		327,420		34,015	

Source: Adapted from Roughton Report

Lesotho citizens who have not received a Transkei visa. Application for a visa must be submitted to Umtata, the capital of Transkei, with an international passport, two photos and a fee of R2.50. Lesotho citizens normally are not holders of international passports. A system of "local passport" has prevailed throughout southern Africa for many years.

When full or partial closure seemed a possibility, following political controversy over the status of the Transkei, Lesotho asked for assistance in preparing itself to meet those eventualities. A March 30, 1977 U.N. Security Council Report (S12315) recommended an emergency program and an accelerated development program. Two roads were given top priority in the emergency program: Quthing to Qacha's Nek and Thaba Tseka to Mpiti (near Qacha's Nek). Although a somewhat lesser priority the GOL also hopes to improve the Roma-Semonkong road and extend it through the mountains to Sekake's.

These three new road projects would greatly improve road access in the southern half of the country and would more closely link this entire section with Maseru. Feasibility studies are now planned or in progress by the Canadian International Development Agency (CIDA) for the Thaba Tseka-Mpiti road and by the West Germans for the Semonkong-Sekake's road. An AID-funded study has been completed for the Southern Perimeter Road.

Outputs:

1. A two-lane road constructed between Quthing and Qacha's Nek with 101 Km. built to Gravel 1 standard and 54 Km. paved with DBST.

2. Final design completed and tender documents prepared for a paved road between Mohale's Hoek and Quthing.

3. Reinforcement of the Seaka Bridge.

Inputs:

The two major AID inputs for the project will be :

1. An A&E contract for final design of the road from Mohale's Hoek to Qacha's Nek, and for construction supervision of the road from Quthing to Qacha's Nek; and

2. A construction contract for the road from Quthing to Qacha's Nek and for reinforcing the Seaka Bridge.

Government of Lesotho inputs include:

1. MOW staff time for managing host country contracts for final design/engineering supervision and construction;

2. Use of MOW facilities, such as the soils laboratory in Maseru by the U.S. contractor;

3. Reimbursement to owners of buildings to be demolished by changes in right-of-way and alignment.

4. An archeologist to locate sites of archeological and paleontological interest during final design.

5. Guardian huts, employment of guardians and maintenance of fencing at selected archeological sites.

6. Project local costs (e.g. office space rental for contractors, local labor, etc)

7. Approximately 50% of all anticipated procurement in South Africa (all vehicles, miscellaneous services, miscellaneous equipment and supplies, some construction materials).

III. PROJECT ANALYSIS

A. Technical Including Environmental Analysis

1. Description of the Project:

The project will finance the cost of Consultant's services to design the road from Mohale's Hoek to Qacha's Nek, a proposed distance of 205.5 kms. (The present distance on the existing alignment is 265 kms.). The project will finance the cost of construction and construction supervision of approximately 155 kms. from Quthing to Qacha's Nek, and the cost of reinforcing the Seaka Bridge north of Quthing. A major realignment between Mt. Moorosi and Mpiti (30 kms.) and a series of minor realignments have reduced the project to its current projected length of 155 kms. (See Table III-A-1.)

The road from Quthing to Qacha's Nek will consist of two lanes (3.5 meters each lane) and will have a gravel surface except for four areas which will have a double bituminous surface treatment (DBST). the four areas are:

Quthing - Mt. Moorosi	35.3 Kms.
Mpiti - Qacha's Nek	9.2 Kms.
Grades of 10 percent or above	4.2 Kms.
Sections through urban areas	5.3 Kms.

The road, in general, follows the existing earthen and gravel road between Quthing and Qacha's Nek. A complete road inventory is available in Berger's feasibility study; for purpose of comparison, the road can be divided into four segments:

TABLE III-A-1

EXISTING AND PROPOSED DISTANCES

Segments	Description	Distances (Km.) Existing	Proposed
I.	Quthing - Mt. Moorosi	41.5	35.3
II.	Mt. Moorosi - Sekake's	115.0	75.9
III.	Sekake's - Mpiti	42.1	34.8
IV.	Mpiti - Qacha's Nek	10.7	9.2
		209.3	155.2

The proposed alignment for the entire road not only reduces the length of the road, but also improves the driving conditions, thereby making it safer to drive and less costly to maintain the road. Some of these improvements are better sight distance, less steep gradient (old vertical alignment exceeds 16% at some points), improved drainage regime, slide controls and better road foundations.

The existing road was constructed without benefit of design criteria by widening old animal trails to accept vehicular traffic. The Roughton and Partners Report of 1974 focused on this issue and recommended new basic road standards which were adopted by the GOL shortly thereafter. A brief description of the above four segments follows:

a. Quthing to Mt. Moorosi (segment):

The alignment in segment 1 flows well in the flat and rolling area; when more rugged terrain is encountered sharp curves and steep gradients (up to 16%) are common. Both vertical and horizontal sight distances in these areas are well below minimum standards. The width of the road varies between 8.5 meters in flat areas to less than 4 meters in the mountainous terrain. The surface condition was described by the Berger feasibility study as fair with some protruding stones; during and after rains the road becomes impassable due to high-clay content of the surface material. There are 4 major bridge crossings and 3 major stream crossings which will require box culverts. The stream crossings have existing bed-level fords with imbedded culverts which often become blocked by stones and debris.

b. Mt. Moorosi to Sekake's (segment 2):

The present alignment in this segment loops south soon after Mt. Moorosi and then turns north northeast over very mountainous terrain to Sekake's. The one major realignment recommended by the Consultant is in this segment. The realignment starts about four kilometers north of Mt. Moorosi, crosses the Quthing River, travels east, and returns to existing road about two kilometers north of Mphaki. The total distance of this new route is about 30 kilometers compared to 61 kilometers on the old alignment. The old alignment of this segment is particularly low standard with many sharp curves and steep gradients (some six kilometers having gradients above 10 percent) on a predominantly narrow platform. About 11 kilometers of this segment is located so close to Quthing River that it is subject to flooding at high water levels. The surface condition of this segment is poor with slippery surface and unpaved fords. There are eight major bridge crossings and thirty-one major stream crossings in this segment which will require box culverts.

c. Sekake's to Mpiti (segment 3):

The alignment in this segment leaves Sekake's in an easterly direction and follows the south bank of the Senqu (Orange) River to Mpiti.

The condition of this road was described in the feasibility study as "bad". This segment has near continual sharp horizontal alignment, steep grades, sharp bends and fords. The surface is earth in a condition so bad as to necessitate use of four-wheel-drive vehicle even in favorable weather conditions. The existing drainage structures are inadequate with little attention given to cross drainage. There are 3 bridges and 8 major stream crossings in this segment which will require box culverts.

d. Mpiti to Qacha's Nek (segment 4):

The alignment in this segment leaves Mpiti in a southeasterly direction to Qacha's Nek no longer following the Senqu (Orange) River. The condition and alignment of this road was described by the feasibility study to be the same as the one described for segment 3 above. There are 3 major stream crossings in this segment which will require box culverts.

e. Seaka Bridge:

An existing single lane steel bridge, the Seaka Bridge, consisting of four, 46-meter steel trusses crosses over the Senqu (Orange) River approximately 15 km. north of Quthing. This 100-year-old bridge is located outside the limits of the proposed road project; however, due to its unique character and critical position, the feasibility study recommends that action be taken immediately to rehabilitate this structure. The study further recommends that the bridge should be thoroughly analyzed during final design and plans/specifications be prepared for remedial work. The bridge is a vital, yet tenuous link connecting Quthing and the project zone of influence to Mohale's Hoek and ultimately to Maseru. Should the bridge collapse the project objective of connecting southeastern and southern Lesotho to the western lowlands and to Maseru (the country's economic center and capital) could not be achieved.

The preliminary analysis prepared by Berger indicates that the trusses are well-proportioned and theoretically the structure has the capacity to carry a given load if certain remedial corrections are undertaken. Berger's rating of this bridge indicates that the bridge, as it stands, would not support a standard 3 axle HS 20-44 truck of 32.7 metric tons but would support a 2 axle H 20-44 truck of 18.1 metric tons. Berger's observation indicates that the top chord joints are restrained from rotation and that the top chord splices are weak. Top chord fixity at these pinned joints allows bending moment to be transferred over the pin, produces secondary stresses and appears to have caused the bending of laterally unsupported column. The corrective cost of this bridge is estimated by the consultant to be about $120,000.

It is on the basis of this recommendation that AID in collaboration with GOL proposes to include the design and remedial works of this bridge in this project.

2. Design Standard:

a. Criteria for Road:

The consultant has reviewed the GOL road standards and the AID Road Assessment Paper, has considered the traffic counts and has conducted detailed road reconnaissance. A recommended basic design was established for width of travelway with a roadbed, maximum gradient and design speed related to chosen longitudinal profiles of the terrain. The recommended road standards are:

TABLE III-A-2

BASIC DESIGN CRITERIA

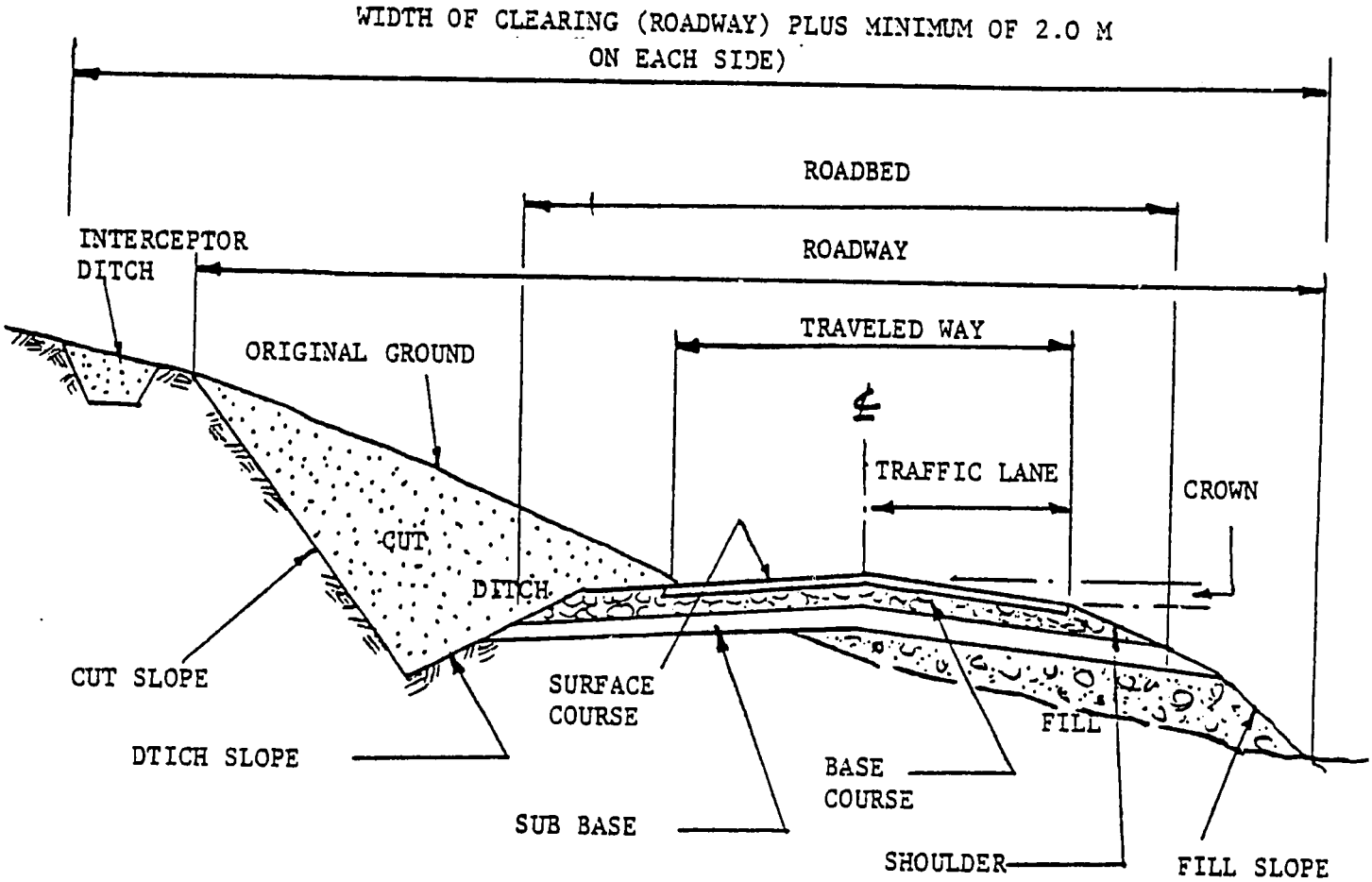
Terrain Type	Design Speed (kph)	Roadbed Width (m)	Travelway Width (m)	Maximum Gradient (%)
Flat	100	12	7	4
Rolling	100	10	7	6
Hilly	80	10	7	8
Mountainous	60	9	7	10

The above recommendations differ only slightly from the present GOL standards. The major difference is the addition of a "flat" terrain classification for which a 12-meter roadbed width has been specified, increasing the shoulder width from 1.5 to 2.5 meters in areas where wider shoulders are desirable and can be constructed at minimal cost.

A slightly wider (0.3 m) surface width (and therefore roadbed width) is recommended for all terrain types, so that the heavy wheel loads of large trucks can be kept further from the edge of paved surfacing. This will reduce ravelling and related repair costs.

The only other change is a slightly increased design speed in mountainous terrain—60 kph as opposed to 50 kph. This was deemed warranted by the consultant because of the primary classification and the geographic importance of the road. To facilitate the reader's analysis of the date, a typical cross section of the proposed road is illustrated below.

TYPICAL CROSS-SECTION ILLUSTRATING ROAD NOMENCLATURE



For the purpose of estimating construction costs the consultant has used subbase course of 15 centimeters, a base course of 15 centimeters and a double bituminous surfacing for segments recommended for paving. Grades of 10% or more were costed with a 20 centimeter subbase. Six inches of surfacing course over sub grade was recommended by the consultant as total structural section for the purpose of estimating the construction cost for segments not proposed for bituminizing. This surfacing is intended to be sufficient for first stage of ultimate DBST design.

The above road design criteria is based on the traffic analysis tabulating in Table "3" below (an analysis of all design standards and criteria are detailed in the Berger Report).

TABLE III-A-3

SUMMARY OF DAILY TRAFFIC ANALYSIS

Traffic Segment	Year 1977	Year* 1981/82	Year 1999
Quthing - Mt. Moorosi			
Light	51	116	767
Bus	6	11	41
Truck	27	56	277
Total	84	183	1085
Mt. Moorosi _ Sekake's			
Light	16	27	288
Bus	6	9	42
Truck	4	6	55
Total	26	42	385
Sekakes - Mpiti			
Light	29	49	440
Bus	4	6	29
Truck	17	27	181
Total	50	82	650
Mpiti - Qacha's Nek			
Light	63	106	938
Bus	5	7	36
Truck	30	47	307
Total	98	160	1281

* First two segments scheduled to open to traffic in 1981; last two segments in 1982.

b. Soils and Materials:

The consultant researched and reviewed available materials, visually inspected quarries and conducted a surface soil survey supplemented by a total of 18 samples obtained and tested in the MOW laboratory.

Examination of some existing cuts was made by the consultant to evaluate the weathering characteristics of the bedrock and to estimate the percent of rock that could be excavated by ripping/blasting. The preliminary soil survey investigation, conducted by the feasibility study, indicates that soils with a CBR of between five and ten predominate. For the purpose of estimating construction costs the feasibility study assumed a CBR of eight for the pavement design purposes based upon data obtained from the various sources listed above. In general, availability of materials will not be a problem. Adequate quantity of gravel is available within a short distance of the alignment. Weathered dolorite is also readily available along the alignment and is recommended by Berger for subbase course provided the oversized gravels are removed. Quarried sandstone found throughout the area is recommended for use in base course, culverts and bridges. Sand for blending purposes is readily available in nearby rivers.

c. Geology:

Geologic rock formation within the project area consists of igneous rocks overlying sedimentary rock. The topmost igneous rocks are basault formed from the cooler lava flows. About two-thirds of the road alignment passes through the cave and red bed sandstone. Numerous intrusions of dolorite dykes are present in the sandstone; many of which are covered by residual soils. Dolorite dykes vary considerably in width and trend in all directions. A seismic survey was recommended by the consultant as part of the final design.

d. Bridges:

This project will require approximately 67 structures (including new proposed crossings) ranging in size from a 184-meter bridge in total span length to 1.0 meter diameter pipe culverts. Rubble masonry, arched culverts and reinforced concrete culverts will be used as extensively as possible to reduce cost and off-shore procurement--and to provide a greater local labor requirement. The feasibility study provides a detailed inventory of all bridges and stream crossing with corresponding detailed cost estimates.

The bridges will be reinforced concrete constructed to current U.S. standards (H 20-S-16 (44)) revised with the dimensioning for travelway curb height and other appurtenance to conform with the best geometric highway design as dictated by traffic, utilization and safety. Unit design stresses will be controlled by source of material. One meter freeboard was recommended as general rule.

All structures on the proposed alignment were considered short-span structures by the consultant, and a 9.0 meter face-to-face of curb dimension was recommended. Pedestrian safety walks of 1.0 meter width with .30 meter high non-mountable safety curbs were recommended.

The bridges will be constructed by using several methods depending upon desired unobstructed waterway opening, total span required; and foundation conditions. Deck crown slopes will not be less than 2%. The methods would include, but would not necessarily be limited to:

Prestressed post tensioning

Precast beams and deck

Cast-in-place

Detailed typical sections are attached in Annex V-C.

e. Culverts:

The culverts will be of 3 types depending on traffic utilization, required waterway, foundation conditions, economics of design, and the potential use of labor-intensive methods and the reduction of the use of off-shore commodities. These will include:

Reinforced box culverts

Precast reinforced concrete pipe (no pipe should be less than 1.0 meters in diameter to facilitate the proper maintenance of the waterway opening)

Rubble masonry arches

Aprons of concrete or rock will be placed downstream of culverts to minimize erosion.

f. Ditches:

There will be both normal and special ditches. The normal ditches will be the size that is normally dictated by the geometric design criteria, while the special ditches will have areas enlarged or altered to meet the drainage requirements for areas with particularly heavy runoff.

All ditches create a runoff velocity which may cause erosion; however, to overcome the erosion problem the ditches with steep slopes will be lined with hand-placed rubble riprap and in severe cases will have Portland cement mortared joints.

g. Alignment:

The recommended preliminary alignment follows, in general, the existing road, but deviates where horizontal and vertical standards can be economically improved. There is one major realignment recommended by the consultant; the realignment starts about four kilometers north of Mt. Moorosi, crosses the Quthing River and returns to existing road about two kilometers north of Mphaki. The total distance of this new route is about 30 kilometers compared to 61 kilometers on the old alignment. Additional savings in the total length, due to minor adjustments amounting to 24 kilometers is also recommended by the consultant. This total 54 kms. savings in the alignment of the proposed road was a significant factor in the economic viability of the project.

h. Environmental Measures:

The Environmental Assessment (EA) addresses in detail the environmental effects of the proposed road construction. The study recommends measures to insure that the environmental factors and values are safeguarded. The study states that the proposed measures will not only reduce negative environmental impact but will provide a net positive benefit. The recommended construction standards to mitigate negative environmental impact which are integrated in the design are:

- aprons of concrete or rock to be placed on the downstream of culverts;
- the ditches with steep slopes will be lined with rubble masonry or concrete;
- where soil is exposed along cuts, hydro-seeding will be used after adding top soil as necessary;
- borrow areas will be selected carefully to minimize erosion;
- existing erosion gullies along the road will be treated to protect the ecology and the road;
- various forms of stabilizing structures such as slope walls retaining walls will be constructed predominantly from locally available rubble stones;
- paving of the road in urban areas.

i) Final Engineering Design Strategy:

A U.S. consulting firm will be contracted by the Government of Lesotho on the basis of open competitiveness to prepare final plans, specifications, contract documents, and assist the GOL in analyzing bids and recommending award. The design consultant will be responsible for the following functions:

— design road from Mohale's Hoek to Quthing;

— design road from Quthing to Qacha's Nek; provide supervision during construction and maintenance period for this section;

— design necessary remedial work to be done on Seaka Bridge and supervise during bridge reinforcement;

— provide paleontologist for 3 months during design period to identify sites of archeological and paleontological importance in collaboration with a GOL-provided archeologist.

3. Construction Procedure and Cost Estimate:

a. Construction Strategies:

The feasibility study discusses in detail several strategies their related cost estimates. The strategies considered are outlined below:

Option 1 - U.S.A. Contractor without TCN* Waiver

Option 2 - U.S. A. Contractor with TCN Waiver

Option 3 - International Contractor

Option 4 - Force Account

Option 5 - Combination of Option 4 and 1 above

Option 6 - Combination of Option 4 and 2 above

The consultants have recommended that Option No. 2, U.S. contractor with TCN waiver, be selected as a construction strategy. The lowest cost option was the international contractor; however, construction by U.S. contractor with the TCN waiver was only slightly (2%) higher. Option No. 1 is approximately 17% higher in cost than Option 2.**Therefore Option 2 has been selected. The Force Account option was rejected due to higher cost and a longer construction period.

* TCN: Allow the construction contractor to employ an unlimited number of non-U.S. or other eligible source country nationals (only key individuals to be U.S. citizens).

** The actual cost differential may be slightly smaller since the Berger analysis incorrectly assumed that TCN's included all non-U.S. host country citizens.

b. Estimated Construction Cost:

The estimated construction costs for all of the above strategies were developed by the consultant on the basis of the consultant's own experience in the developing world and locally available cost data adjusted to suit the special conditions of this project.

The project was costed by the consultant on the basis of a 24-month construction period plus six months of mobilization time (total contract period of 30 months).

AID engineers have reviewed the cost estimates and the related standards derived from the method of construction and found both to be appropriate to the nature of the road proposed for construction.

A detailed construction cost using a U.S. contractor with a waiver to allow non-eligible source country nationals was prepared based on consultants cost recommendation. It should be noted that the construction cost estimates are based upon the following procurement assumptions:

Equipment	U.S.A.
Construction material (asphalt steel, cement and possibly some steel culverts)	R.S.A.
Contractors key staff	U.S.A.
Contractors mid-level management staff	Non-U.S. or other eligible source country nationals
Contractors operational level staff	Lesotho
POL source	R.S.A.

Additionally project cost estimates in the Financial Analysis include 10% physical contingency, an inflation escalation factor of 8.5% for all procurement in U.S. and 12.0% escalation for all procurement from Southern Africa (Lesotho and the R.S.A.), both compounded annually.

Louis Berger International has reviewed MOW general standards (initially prepared by Roughton and Partners in 1974), and has recommended minor modifications acceptable to AID engineers.

As discussed in Section IV A, Administrative Responsibilities and Capacities, the MOW has agreed to administer the contracts for the design and supervision and construction , and has the capacity to do so adequately. An AID direct-hire engineer was specifically assigned to Maseru to assist in project implementation.

TABLE III-A-4

CONSTRUCTION COST ESTIMATE

(000 of 1978 U.S.$)

Preliminary	826
Site Clearance	65
Top Soil	866
Earth Work	6,303
Sub-base	2,386
Base	1,569
Prime Coat	201
First Coat	290
Second Coat	339
Pipe Culvert	527
Grouted Ditch and Inlets	304
Box Culverts	4,365
Bridges	2,353
Miscellaneous	140
Repair of Seake Bridge	120
Total:	20,654 (physical and price contingencies not included)

Additionally, REDSO engineer, contract officer and legal staff will be available to assist OSARAC on an as needed basis. A consulting firm will be selected to prepare the final design, contract documents and to provide the construction supervision. Monthly reports will be required from the consultant. A U.S. or Code 941 construction contractor will be selected to do the actual construction work.

X. SUMMARY AND CONCLUSIONS

Section 611(a) (1) of the FAA related to technical and engineering plans is deemed to be satisfied. The consulting firm has provided a feasibility study and cost estimates which were reviewed and accepted by AID engineers.

4. Maintenance

Proper maintenance of Lesotho's national road system has been a continuing problem over the past several years primarily due to lack of funds and insufficient trained personnel and equipment with which to perform maintenance. Coupled with these constraints are the increasing burdens placed on the Roads Branch of the Ministry of Works to "stretch" their limited personnel to provide maintenance for an increasing net of roads funded or planned for funding by other donors. The differential between wages offered by the GOL and private firms in the RSA for skilled maintenance personnel (up to 50 percent less in Lesotho) has made it difficult for the MOW to retain qualified personnel. Constant vacancies in the Branch's authorized strength of 97 people range from 30 to the current 50 percent. Also, the existing GOL/MOW plant pool rental system for equipment and vehicles required for maintenance purposes appears disruptive to maintenance operations because of high rental rates and lack of control of equipment availability by the Roads Branch.

Lesotho's national road network consist of approximately 220 Km. of bituminous roads, 800 Km. of gravel roads, and 1000 Km. of tracks. Accordingly, approximately 50 percent of the country's roads are in the "track" category; 40 percent in the "gravel" category of which the main portion can be considered as in the "average" and "poor gravel" categories; and only 10 percent in the paved "bitumen" category. Berger's report elaborates on the relationship of depreciation and maintenance costs to road surfaces. The lack of adequate maintenance facilities for the 80 to 90 percent of Lesotho's roads that are track and average or poor gravel roads places excessive cost burdens on vehicle owners in Lesotho. The Ministry of Works (MOW) and its Roads Branch are aware of the importance of adequate maintenance and are doing the best possible with their limited resources. A process is underway to make the plant pool semi-autonomous which will allow salaries to be competitive with RSA for vehicle mechanics. Also a major study of the MOW's national maintenance procedures and capacities is underway, financed by the African Development Bank.

At the present a minimum budget for maintenance of Lesotho's road system could be estimated as follows:

20 Km. of bitumen roads; resurface once every 8 years or 27.5 km/yr @ R5840	R 220,600
Patching and general maintenance of remaining length per year; 192.5 km @ R 1000/km	192,500
800 Km. of gravel roads; re-gravel every 5 years or 160 km/yr @ R 2000/km	320,000
Grading of remaining 640 Km twice a year @ 300/km	384,000
Tracks, 1000 Km; grade once a year @ 300/km	300,000
Labor teams	350,000
Labor camps, maintenance depots, etc.	100,000
Bridges	50,000
Transportation, POL, etc.	240,000
Total minimum maintenance budget	R 2,097,100

The FY 78-79 (April 1, 1978 - March 31, 1979) budget programmed for road maintenance was R 2,000,000. Lesotho's allocations for national road maintenance have been as follows for the past six fiscal years:

FY 78-79	R2.0 million ($2.3 million)
FY 77-78	R1.5 million
FY 76-77	R1.3 million
FY 75-76	R1.35 million
FY 74-75	R0.551 million
FY 73-74	R0.528 million
FY 72-73	R0.325 million

As roads funded by assistance from donors continue to be added to the Road Branch's workload, more financial resources will be necessary, not only for added maintenance burdens, but for upgrading of existing roads as well to restore the geometric standards under which the roads were initially constructed. Additionally, many of the country's 1000 Kms. of track require major improvements which have not been accomplished to date because of the limited funding.

Based on feasibility report data for financial maintenance costs (revised to reflect inflation at 12% p.a.), the following schedule is furnished to reflect maintenance costs from 1983-1999.

TABLE III-A-5

FINANCIAL MAINTENANCE COSTS*

(Inflation 12% p.a.)

($000 of 1978 $/Current $)

Segment		1	2	3	4	Total Financial Cost
		Bitumen	Gravel 1	Gravel 1	Bitumen	
Year	Factor					
1980						**
81						**
82						**
83	1.762	21.0/37.0	39.8/70.1	21.5/37.9	5.5/9.7	154.7 ***
84	1.974	21.3/42.0	40.6/80.1	22.3/44.0	5.6/11.0	177.1
85	2.211	21.7/48.0	41.5/91.7	23.2/51.3	5.7/12.6	203.6
86	2.476	22.0/54.5	42.4/105.0	24.1/59.6	5.9/14.6	233.7
87	2.773	22.5/62.4	43.6/120.9	26.6/73.7	6.0/16.6	273.6
88	3.106	22.9/71.1	44.8/139.1	29.2/90.7	6.3/19.5	320.4
89	3.478	23.4/81.4	45.9/159.6	32.2/112.0	6.9/24.6	377.0
1990	3.896	25.5/99.3	47.5/185.0	35.5/138.3	7.4/28.8	451.4
91	4.363	27.6/120.4	48.7/212.5	39.3/171.5	8.1/35.3	539.9
92	4.887	29.9/46.1	50.5/246.8	43.4/212.1	8.9/43.5	548.5
93	5.473	32.6/178.4	54.2/296.6	48.0/262.7	9.6/52.5	790.2
94	6.130	35.5/217.6	58.8/360.4	53.3/326.7	10.5/64.3	969.0
95	6.866	38.8/266.4	65.7/451.1	58.8/403.7	11.5/78.9	1200.1
96	7.690	42.3/325.3	72.2/325.3	65.1/500.6	12.6/96.9	1478.0
97	8.613	46.4/399.6	80.0/689.0	71.8/618.4	13.5/118.8	1825.8
98	9.646	50.8/490.0	88.4/852.7	79.8/769.7	15.2/146.6	2259.0
99	10.804	55.8/602.8	97.6/1054.5	88.5/956.1	16.7/172.4	2685.8

* Based on "reasonable plant pool rental rates" (See Section III-D)-

** Contractor's responsibility.

*** $116,000 if GOL maintenance responsibility begins in April, 1983.

If one assumes that the MOW budget for maintenance will grow annually at the conservative rate of 12% (the estimated rate of inflation), maintenance of the project road would require approximately 04% of the total MOW maintenance budget in 1983, certainly a supportable financial load.

A list of the current plant pool equipment which is controlled and maintained by the Mechanical Branch of the Ministry of Works is attached in Annex C. Also in Annex C is a Ministry of Works 1976 notice (abbreviated) which reflects typical revised hourly rental rates for the Government's plant pool equipment. Initial checks by the consultant team reflected that rental rates in the Republic of South Africa for equivalent equipment are approximately one-half to one-third of those used by the plant pool. The high rental rates reflect the small supply of available heavy equipment and the lack of sufficient number of trained mechanics. The high rates accordingly have a negative impact on road maintenance since a high proportion of the Road Branch's annual budget must be used for equipment.

A study of the plant pool equipment rental system is included in a national road maintenance study by TAMS and Brian Colquhoun and Partners, and their complete report is expected in May 1978. As part of the project agreement, the GOL will covenant to consult with AID regarding, inter alia, the reasonableness of plant pool rental rates once the TAMS report is available.

The EEC provided a one-year R1.5 million grant in May, 1977 to keep the road open on an emergency basis and provide for some upgrading work. An additional R. 70,000 was provided by the EEC for maintenance tools and for two maintenance camps at Mphaki and Qacha's Nek, and more funds are expected for tools at Mohale's Hoek. These, however, are for maintenance of light vehicles and not for heavy road equipment.

As reflected above the Government will have the barest minimun of resources with which to maintain the project road if external assistance is not provided to train personnel and provide equipment. As an example, of 71 authorized technical positions in the Roads Branch 33 are vacant and 28 of these vacancies are for positions having field maintenance responsibilities. To maintain the project road, the Roads Branch proposes to have maintenance centers at Qacha's Nek, Mphaki, and Quthing. Through a separate FY 79 project, Mission expects to improve the Government's maintenance capabilities through provision of both training and equipment. Additionally, an IBRD project for construction of a road from Joel's Drift to Oxbow will also include provision of road maintenance assistance on a national scale. Although we and the IBRD can assist in improving maintenance capabilities, the Government will have to agree to a satisfactory budget allocation for road maintenance in 1983 and beyond as a covenant. AID will also use its influence to encourage better equipment rental rates by the plant pool based on a review of the TAMS/Colquhoun study.

In addition, following normal procedures, the construction contract will be written to require the contractor to maintain the

project road during the entire construction period and that the contractor be required to complete the total project (about 155 kilometers) before acceptance by the government and issuance of a certificate of completion. Upon issuance of a certificate of completion, the contractor will be further required to maintain the completed road for a 12 month period. These measures will ensure that proper road maintenance is provided until 1983.

Based on the foregoing, Mission has prepared a 611(e) determination which recognizes that AID and/or other donor assistance to improve the quantity and quality of Lesotho's road maintenance cadre and the GOL's commitment to provide adequate budget resources for road maintenance will ensure the GOL's capacity to effectively maintain the project road.

5. Environmental Analysis

Louis Berger International was commissioned to prepare an Environmental Assessment for the Lesotho Southern Perimeter Road project. The purpose of an Environmental Assessment (EA) is to provide the Agency and host country decision makers with a comprehensive understanding of the reasonably foreseeable environmental effects of the proposed project and their reasonable alternatives so that the expected benefits of development objectives can be weighed against adverse short or long term impacts upon the human environment or any irreversable or irretrievable commitment of resources. The EA for the Lesotho road project provides adequate information for this contemplated balancing of interest.

The EA identifies erosion and loss or damage of archeological and paleontological features as potential significant adverse effects of the project. Less significant environmental adverse effects identified by EA are loss of some agricultural land, increased traffic safety problems, strip development and deterioration of air and water quality. Short term negative impacts are identified as traffic disruption and some damage to fields. The EA demonstrates that all but one of these negative impacts are to some degree controllable. The unavoidable negative impact of improving the road is loss of some agricultural land. The improved road alignment will result in taking some agricultural land and lead to possible division of some property. Because the quantity of land is relatively small, the loss to Lesotho will not be significant. The impact on individuals will be significant but since they will be compensated with other land it will be only temporary. Under Basotho law all land belongs to government, individuals are given plots of land for cultivation and use. When land is expropriated for government use the farmers are compensated with other land. The owners of expropriated buildings are compensated with cash.

The EA indicates that the most significant threats to the environment under the project are erosion and the potential loss of archeological and paleontological features. Road construction has contributed to Lesotho's serious erosion problems, although it is a relatively minor factor when compared to over-grazing and poor farming practices. The EA suggests that certain measures be undertaken during construction of the road which will, in large part, eliminate erosion caused by the road. The suggested measures to be included as part of the project are:

a. Aprons of concrete or rock will be placed downstream of culverts to dissipate water energy and discourage gully formation.

b. Adequate drainage with careful selection of outlet points will be planned in the course of final design, and built into the road.

c. Where soil is exposed along cuts, hydro-seeding will be carried out after top-soiling as necessary.

d. Borrow areas will be selected as to minimize erosion.

e. Existing erosion gullies along the road will be treated to protect the ecology and the road.

The EA also argues that an indirect impact of the road will be easier access to range and soil conservation extension services which should contribute to reducing the general land erosion problem.

Construction of the road may destroy a number of irreplaceable internationally significant rock paintings, fossil remains, and fossil trackings. The EA describes measures to be taken to avoid damage to the relics, but makes it clear that some damage may be unavoidable. The measures to be taken as part of the project are:

a. The final design contract for the road will include a survey team consisting of:

Paleontologist: 3 months (to be provided by AID)

Archeologist/Rock Painting Specialist: 3 months (to be provided by National University of Lesotho)

The team is to locate sites of archeological and paleontological interest and should locate village burial grounds and other areas of particular concern. They should work in coordination with area chiefs and village headmen. The team's findings and recommendations for minor alterations in the road alignment to avoid destruction of these sites will be fed into the final design of the road.

b. The construction contract should include a provision to allow alteration of alignment in the event of uncovering a significant paleontological or archeological site during the construction.

c. Fencing of approximately seven noteworthy archeological sites (AID funding).

d. Employment of guardians and maintenance of fencing at these sites (GOL responsibility).

e. GOL will covenant to finance any additional costs associated with steps recommended to ensure preservation of ruins.

The EA concludes that if measures suggested for limiting erosion are undertaken the potential for water pollution will be eliminated. Air pollution will not pose a significant problem if roads are bituminized through urban centers, thereby reducing dust.

Traffic safety problems can also be limited, though not completely avoided, by proper design of the road and the institution of road safety measures.

Strip development is a potential minor problem, but the government through its control over use of the land can limit such development.

The EA shows that most potential negative impacts from the project can be limited if appropriate measures are undertaken. The only unavoidable significant negative impact will be the loss of a small amount of agricultural land.

Alternative alignments for the road were considered and studied under the EA, but it was determined that on balance the benefits of the chosen alignments outweigh their negative effects. Alternative alignments were only considered where the new alignment deviates from the existing alignment of the old road (beginning 4 Kms. east of Mt. Moorosi and ending near Mpaki (30 Kms.)). The alternative considered was use of the existing alignment. Use of the existing alignment would reduce the loss of agricultural land, but would substantially reduce the benefits of the road.

The alternative of not doing the road was considered but discarded because of the loss of the benefits expected from the road.

Alternative design standards are also considered under the EA. The two alternatives are gravel with some short bitumen sections or an all bitumen road. Based uniquely on environmental considerations, the EA recommends an all bitumen road because it would reduce erosion from the road services and reduce dust, while recognizing that a bitumen road will likely increase the traffic accident rate and increase runoff in storms.

The EA concludes that the project will involve no irreversible or irretrievable commitment of resources, if the archeological and paleontological sites are adequately protected.

The EA identifies as potential benefits of the road reduced transportation costs, improved access to health and education services, improved postal and police services, improved marketing of crops, increased availability of fertilizers, seeds, equipment and agricultural

extension and marketing services, and an increased ability of the government to control erosion. There will also be some short-term employment benefits realized from the construction activities. Also the project will meet an urgent political need to connect the semi-isolated district of Qacha's Nek to the western area of Lesotho, now that the travel and shipment of goods across the border to Transkei are tenuous. Additionally Basotho will be able to travel to the western regions of Lesotho without traveling through the RSA and being subjected to racial harassment.

The EA states that if the recommended measures are conscientiously undertaken, the project will not only reduce the negative aspects of the road to negligible proportions, but by providing good conservation practices, not existing today, will provide a net positive benefit of considerable importance. These measures are not only important from an environmental viewpoint, but have long-term economic implications as well. As discussed in Section III-C considerable non-quantifiable socio-economic benefits will accrue to the populace in the zone of influence. It is recognized that these benefits will be a secondary effect of the road, but the road will be the catalyst to bring about such benefits. GOL officials were consulted during preparation of the EA as well as during the preparation of the engineering design. The GOL reviewed the completed EA and endorsed its findings and recommendations.

OSARAC and REDSO participated in development of the EA and are satisfied that it provides an adequate basis for weighing the expected benefits of the project against short and long-term impacts of the human environment and generally agree with the conclusions of the EA and its recommendations for mitigating the potential negative effects of the project. Therefore, it is recommended that this project be approved as proposed.

B. Economic Analysis

1. Methodology

The country economic setting and the project zone of influence are described in detail in Annex. E. The zone of influence is discussed briefly below.

Standard economic procedures have been utilized for determining the economic return on this project. Project costs are calculated based on the cost of final engineering design, engineering supervision, road construction at the road design standards recommended for the project, and road maintenance over a 20-year period. Quantificable economic benefits have been conservatively limited to user savings accumulated through lesser vehicle operating costs over an improved surface and the shorter and higher quality alignment, and road maintenance savings where maintenance costs with the project are less than maintenance costs without the project (e.g. for the existing road). Due to a paucity of data and limited time the consultants did not quantify benefits (or related investment costs) that might be expected to accrue in the two sectors - agriculture and tourism - which are expected to receive major impetus in the zone of influence due to the upgrading of the road. The Berger analysis did consider, however, the potential for agriculture and tourism, as well as project population, macro-economic and vehicle registration growth rates in projecting future traffic on the upgraded road. Other quantifiable benefits which should be mentioned, although not included in this analysis, are added employment and expenditures on wages and salaries to Basotho employees hired specifically to work on road construction.

The benefit analysis in Annex V-E discusses project economic benefits obtained from decreased vehicle operating costs (VOC) based on delta-L values, the shortened alignment (209.3 Km. to 155.2 Km.), and from decreased road maintenance expenditures. VOC savings are the major source of project benefits.

A final benefit is the residual value of structures beyond the 20 year life of the project. Under normal economic practices 100 percent of earthwork and 50 percent of structure construction costs may be considered residual value or benefits. The many unquantifiable or social benefits from the project are discussed breifly in Section III.C. and in detail in Annex V-F.

Two sensitivity analyses were carried out. The first increases construction costs by 20 percent, the second decreases benefits by 20 percent.

2. Zone of Influence of the Project.

The zone of influence of the project has been defined as the administrative districts of Quthing and Qacha's Nek. Approximately 165,000 people or 13.62 percent of the population of Lesotho live in this zone. The zone is primarily agricultural in nature and has excellent potential for tourism.

No major mineral resources have been discovered in exploitable amounts to date. The zone encompasses 22.8 percent of the area of Lesotho, 10.2 percent of its arable land and 22.4 percent of its grazing land. Due in large part to its inaccessibility the zone accounted for only 10 percent of Lesotho's production of its five major crops (maize, sorghum, wheat, beans and peas) in 1976. Inputs and extension services are not readily available (less than 5 percent of farm households used any chemical fertilizers in 1970 - the most recent data available). Poor marketing channels for crops have also proved a constraint to increased crop production. The zone has a comparative advantage in livestock and contains 15 percent and 25 percent of Lesotho's cattle and sheep/goat herds respectively. However livestock offtake rates and productivity has again been hampered by the general absence of veterinary medicines, extension assistance and poor marketing. Historic points of interest and excellent archeological sites (Bushmen paintings and fossils such as dinosaur footprints) are found throughout the zone which when combined with extraordinary scenery provide excellent opportunities for increased tourism.

3. Traffic on the Project Road

For purposes of traffic projections, the road has been divided into four segments. The annual rates of growth in traffic by segment between 1973 and 1977 have been extraordinarily high, ranging from 16.3 percent per annum to 57 percent per annum. After careful analysis, the consultants selected the following rates of growth along the road for each of the three main categories of vehicles:

TABLE III-B-1

TRAFFIC GROWTH RATE

	1978-1987	1988-1999
Light Vehicles	14% pa	12% pa
Buses	10% pa	8% pa
Trucks	12% pa	10% pa

These traffic growth rates assume that while traffic has increased markedly from 1973 to 1977 due to minor improvements in the road, especially the EEC-financed spot improvement program,

this increased traffic represents only a minor portion of the potential annual and induced traffic growth. This is because the temporary road improvements from the EEC program, which did not include installation of culverts and other drainage structures, have already been largely negated during the ensuing rainy season. Without proper drainage the road is unmaintainable at reasonable costs. Hence without this project, traffic is certain to decline back towards 1973 levels.

Finally, these traffic estimates assume that the Southern Perimeter Road will remain part of an "open" system, e.g. that the border with Transkei will not be closed to all vehicular traffic. If the system is "closed" for political reasons, an additional significant increase in traffic would certainly result since Quthing and Qacha's Nek districts would have to be fully provisioned from the western lowlands of Lesotho. Table III-B-2 shows actual and projected total traffic (AADT) on the road assuming the system remains open. *

TABLE III-B-2

ACTUAL AND PROJECTED TOTAL TRAFFIC (AADT)

Segment	Km.	Actual Traffic 1973	Actual Traffic 1977	Annual % of Growth	Projected Traffic 1985	Projected Traffic 1990	Projected Traffic 1995	Projected Traffic 1999	Average Annual Projected Growth Rates
1	41.5	46	84	16.3%	271	444	723	1085	12.3
2	115.0	10	26	27 %	115	166	248	385	13.0
3	35.	13	50	57 %	178	277	440	650	12.2
4	10.7	28	98	37 %	309	514	848	1281	12.4

4. Economic Return

Given that the social opportunity cost of capital in Lesotho is about 10-12 percent the stream of costs and benefits indicate that the proposed investment in the Southern Perimeter Road is economically sound yielding a 17.2 percent return (See Table V-E-29). Sensitivity tests were applied to the economic analysis which assumed construction cost increases and decreased economic benefits. The assumed variables used in these tests and the related economic returns are:

*Should Lesotho-Transkei relations improve, the traffic estimates found below would not be changed significantly since they assume that the border will be "open." In the longer term if political relations between Lesotho and Transkei improve the Southern Perimeter Road would provide Lesotho with access to Port St. John's and the sea without traveling through South African territory.

Assumption	Economic Return %
Best estimates	17.2
Best estimates except:	
20 percent increases in project costs	14.9
Best estimates except: percent decrease in pro: benefits	14.5

Thus, although the project is somewhat more sensitive to reductions in projected benefits (essentially traffic volume) than to increases in costs it would still be quite viable economically even if major 20 percent fluctuations in either factor should occur.

C. Social Soundness Analysis

The social structure of Lesotho and the social setting for the project are discussed in detail in the Berger Feasibility Study and the environmental Assessment.* A discussion of the Berger analysis is located in Annex F and their basic findings are found below.

The most pertinent social characteristics which relate to this project are: (a) income distribution in Lesotho and the project area; (b) migratory labor; and (c) the role of women. These three characteristics are closely interrelated.

In brief, income distribution in the project zone of influence and Lesotho as a whole is extremely equitable. Income levels are quite low, averaging only about $190 annually. Most personal income is obtained through migrant labor remittances and off-farm activities. Household expenditures are predominantly for food and clothing as would be expected for such poor families. Funds for "capital" expenditures such as purchase of livestock, vehicles, payment of bride price and construction of buildings come primarily from the earnings of migrant laborers in South Africa.

Lesotho has the highest relative proportion of its population engaged in migratory labor of any African country. Over three-quarters of Basotho men are absent working in South Africa during their prime working years of 20-40 years old. Approximately 200,000 Basotho (out of a total population of 1.2 million) are working in South Africa at any one time.

The absence of adult males from most Basotho households has led to an increased role for women within the society. Women are important political forces both at the village ("pitso") and national levels. They generally receive more education than men (boys drop out to carry out their responsibilities as herdboys). Women predominate in administrative, health and education positions in the society, sometimes at the highest levels.

Effects of the Project on Socio-Cultural Patterns: The Berger Feasibility Study and the Environmental Assessment conclude that the upgraded Southern Perimeter Road will have no substantial negative effects on the social structure of the region and will have some clearly positive effects.

Citing historical evidence Berger found no likelihood that the improved road will lead to significant shifts in population

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* The Berger team included an experienced sociologist with African experience.

concentration. Similarly migratory labor patterns will not be substantially modified (no increased outflow of labor likely) although the road will reduce travel time from South African mines and could enable over half of the migrants from the zone of influence to return home more frequently for weekends and short periods (e.g. for planting and harvesting).

The improved road should lead to increased provision of and access to agricultural inputs and services (including marketing) and hence greater agricultural productivity. It should also encourage tourism in the zone of influence. AID and the GOL will take steps under the project to protect the valuable archeological and paleontological features of the zone from tourists who practice vandalism (e.g. break off the rocks on which ancient bushmen rock paintings are found). Also as a part of final engineering design AID will provide funds for a qualified paleontologist to work with a GOL-sponsored archeologist from the National University of Lesotho to locate sites of archeological and paleontological interest and recommend minor realignments to avoid their destruction during road construction.

Beneficiaries: In theory, the beneficiaries of the Southern Perimeter Road project are the 165,000 inhabitants of the project's zone of influence. In reality, however, defining the project beneficiaries is more complex. The direct beneficiaries are those people who receive employment directly through the project (i.e. work on road construction) and those who will utilize the upgraded road. A substantial number of Basotho will be employed on road construction. In addition, if adequate labor is available, labor-intensive construction techniques will be used for masonry work (drainage) along the road.

The people who utilize the improved road will be those with personal vehicles or bicycles, those with access to Government vehicles, and bus passengers, whether they live in the project zone of influence or merely transit the area (tourists, merchants from Mohale's Hoek, Maseru, etc.). However, the project will also significantly benefit a much larger group of people, albeit indirectly. These are people who indirectly benefit from improved Government services in the zone of influence, the increased availability of consumer goods and private services and improved marketing channels for their produce.

In addition, the zone populace will benefit indirectly from the accelerated development program which the GOL plans to carry out in the region and the employment plus income generation therefrom. The extent to which the total population of the zone of influence can be deemed project beneficiaries coincides with their access to the road itself. The UN-sponsored feeder road project will greatly

enhance the access of small mountain villages to the Southern Perimeter Road and hence will increase the benefits they receive from the road.

Benefits to the populace in the zone of influence are many and varied. Private vehicle cost savings and public maintenance savings can be quantified and are discussed in the Economic Analysis section of this document. Many other benefits, usually termed social benefits, cannot be easily quantified. Some of these social benefits are briefly summarized below.

Education:

- Improved access to schools.

- Reduction in cost of school supplies (e.g. costs of black boards and desks are said to double for every 100 km. of mountain road).

- Qualified teachers more apt to accept assignment and stay in the region.

- Improved educational administration plus supervision.

- Improved access to non-formal education materials.

Health:

- Improved access to clinics and hospitals and quicker transport from clinics to referral hospitals.

- Lower operating costs for health facilities due to reduction in freight and passenger transport costs.

- Improved health supervision and administration.

Agriculture:

- Increased availability of inputs, agriculture, extension and marketing facilities.

- Improved MOA supervision and administration.

- Reduced dependence on a single local trader.

- Reduced costs for farm equipment rental.

- Less loss in cattle weight as trucking to market substitutes for trekking.

Miscellaneous:

- Improved tax collection.

- Increased distribution of newspapers, magazines and books.

- Reduction in bus and truck transport rates.

- Improved vehicle repair facilities as road traffic generates new businesses.

- Increased identification of regional population with GOL goals and aspirations.

OSARAC will request REDSO/EA or AFR research funding for a detailed baseline socio-economic study of the zone of influence. In 1988, five years after completion of road construction, a follow-up study will attempt to measure socio-economic change in the zone and assess to what degree that change (positive and negative) can be attributed to the upgraded Southern Perimeter Road.

D. Financial Analysis

Total project costs are estimated at $31,450,300.

Table III-D-1, Summary Cost Estimate and Financial Plan, provides cost estimates for the three major project-funded activities - Final Design ($800,000), Engineering Supervision ($1.4 million), and Road Construction ($20,654,000). A fourth line item, GOL Local Support is also included ($500,000). This latter item summarizes several GOL project support costs, some in cash, most in-kind, which are required for efficient project implementation but which will not be the responsibility of the project contractors. This includes Ministry of Works personnel time to manage and monitor host country contractor for final design, engineering supervision and construction; GOL reimbursement for expropriation of buildings in the road right-of-way (under GOL law expropriation of cropland is not reimbursed; alternative land is provided); use of MOW facilities such as its soils laboratory by contractors; and the protection of archeological and paleontological sites along the road (salary of archeologist for final design, guardian, guardian hut, and maintenance of fencing).

A physical contingency of $2.065 million is included based on 10 percent of construction costs. The total inflation factor is estimated at $6,031,300 million based on 8½ percent inflation on U.S. costs and 12 percent inflation on costs in Southern Africa (including local costs), both compounded annually.

Total project costs are estimated at $31,450,300 of which AID will provide $25,950,300 (rounded to $26 million). The GOL will provide $5.5 million or 17.5% of project capital costs.

It is estimated that approximately 90 percent of the costs of final design and engineering supervision will be U.S. costs for which the 8½ inflation rate is applicable. Further, approximately 70 percent of construction costs will be U.S. costs.

These proportions do not coincide directly with the foreign exchange and local currency breakdown in Table III-D-1 in which 92 percent of construction costs are foreign exchange costs and 8 percent local costs. In the latter case, foreign exchange costs include all non-Lesotho procurement (U.S. and South Africa primarily). In the former case for purposes of estimating inflation contingency Lesotho and South Africa costs were combined since they use the same currency, the Rand,

TABLE III - D-1

SUMMARY COST ESTIMATE AND FINANCIAL PLAN
(US $ 000)

Source	AID FX	AID LC	Host Country FX	Host Country LC	Others FX	Others LC	Total
Use							
1) Final Design	620		100	80			800
2) Engineering Super.	1060		200	140			1400
3) Construction	17401		1600	1653			20654
4) GOL Local Support	-	-	-	500			500
Inflation factor at 8½% U.S. costs; 12% Southern Africa costs	5129.3		414.3	487.7			603[illegible]
Contingency 10% physical	1740		160	165			2065
TOTAL	25950.3	0	2474.3	3025.7			31,450.3

and are subject to very similar inflationary pressures.

Project Disbursement: Table III-D-2, Projection of Expenditures by Fiscal Year found immediately below shows the estimated project expenditure by source over the project's five year disbursement period.

TABLE III-D-2

PROJECTION OF EXPENDITURES BY FISCAL YEAR

(US $ 000)

Fiscal Year	AID	Host Country	Others	TOTAL
78	124	61		185
79	496	219		715
80	8125	1800		9925
81	8125	1800		9925
82	2211	393		2604
Inflation factor at 8½% for US costs,	5129.3	902		6031.3
12% Southern Africa costs.	1740			
Contingency (10% Physical)		325		2065
TOTAL	25950.3	5500		31450.3

Recurrent Cost Analysis: Lesotho is an RLDC whose recurrent revenues are heavily dependent upon a single source - Southern Africa Customs Union duties. Under the Customs Union Agreement the Republic of South Africa is responsible for collecting all revenues from customs duties, sales and excise taxes levied on goods in the Rand area. A portion of these taxes, calculated on the value of Lesotho's total imports plus a subsidy of 42 percent, is then transferred to Lesotho two years after initial collection.

As Table III-D-3 shows, GOL revenues are scheduled to almost double from R27.4 million in 1976/77, to R51.2 million in 1977/78. This major increase and a smaller increase in 1978/79 results largely from the imposition of an import surcharge in 1976 and the resulting increase in Custom Union receipts. Revenues should level off after 1978/79 and may actually decrease when and if the surcharge is lifted. Government recurrent expenditures are expected to rise by 36 percent from R32.6 million to R44.4 million over the same period which would imply that revenues available for allocation to the GOL capital investment program (development budget) should increase from the R4.5 million average over the 1973-76 period to about R7 million. If one optimistically assumes that approximately $7 million in GOL revenues will be available for the development budget for each year of the 5 year life of the project or $35 million in total, the enormity of the government's $5 million cash contribution to this project becomes evident - it represents a full 15% of the GOL's resources for capital expenditure over the period.

The Ministry of Works (MOW) Budget has increased by 16 percent annually over the 1975/76 - 1977/78 period, somewhat ahead of the 12 percent average inflation rate (See Table III-D-IV). Allocations for maintenance were increased from R1.3 million in 1976/77 to R2.0 million in 1978/79.

The construction contractor will have a one-year maintenance responsibility for the road after acceptance of his work and, of course, will be responsible for maintaining the road during the construction period. Assuming that the contractor's maintenance responsibilities for the road terminate in April, 1983 and the GOL assumes maintenance responsibility for the full road in 1983, the following maintenance costs will be required for the road (See Table III-A-5 for more detailed estimates).

Table III-D-3

RECURRENT REVENUE 1974/75 - 1979/80

(IN MILLIONS OF RAND AT CURRENT PRICES)

Sources	1974/75 Actual	1975/76 Revised Estimate	1976/77 Revised Estimate	1977/78 Revised Budget Estimate	1978/79 Projection	1979/80 Projection
Tax Revenue						
Custom Duties	17.3	15.3	14.1	35.2	48.7	48.0
Personal Income Taxes	4.3	4.5	5.4	5.9	6.3	6.9
Other Taxes	1.7	1.9	2.3	2.5	2.8	3.2
Non-Tax Revenue						
Fees, Charges	0.9	0.8	1.7	2.3	2.3	2.7
Fines & Forfeits	0.1	0.1	0.1	0.2	0.2	0.2
Interest	3.3	2.4	1.6	1.9	1.9	2.5
Revenue from Government Property	0.2	0.2	0.2	0.2	0.2	0.3
Commercial Revenue	1.2	1.4	1.7	2.4	2.5	2.9
Reimbursements	0.1	0.2	0.3	0.6	0.3	0.3
TOTAL	29.1	26.8	27.4	51.2	65.2	67.0

Source: Donor Conference Papers, September 1977

Table III-D-4

RECURRENT EXPENDITURES 1974/75 - 1979/80
(IN THOUSANDS OF RAND AT CURRENT PRICES)

Ministry	Revised Estimate 1975/76	%	Revised Estimate 1976/77	%	Budget 1977/78	%
Agriculture	1,686	6.5	3,752	11.4	4,554	10.3
Health	1,652	6.4	2,142	6.5	2,796	6.3
Education	6,762	26.0	7,886	21.7	8,809	19.9
Finance	1,688	6.2	1,825	5.6	2,068	4.7
Commerce and Industry	265	1.0	516	1.6	689	1.6
Planning and Statistics	-	-	299	0.9	334	0.8
Justice	523	2.0	705	2.2	772	1.7
Prime Minister	644	2.5	1,723	5.3	1,883	4.2
Prisons, Information and Broadcasting	1,267	4.9	835	2.6	934	2.1
Interior and Rural Development	1,445	5.6	2,277	7.0	1,652	3.[illegible]
Police	2,463	9.5	3,591	11.0	4,013	9.0
Foreign	1,377	5.3	1,108	3.4	1,289	2.9
Works	2,497	9.6	2,896	8.9	3,367	7.6
Transport and Communications	661	2.5	973	3.0	1,135	2.6
Public Debt	778	3.0	553	1.6	730	1.6
Pensions and Gratuities	1,042	4.0	1,006	3.1	1,047	2.4
Other	1,323	5.0	824	2.5	7,682*	17.2
TOTAL	25,985	100.0	32,636	100.0	44,367	100.0

* Includes provision of R5.7 million for 1977 salaries review.

Source: Donor Conference Papers, September 1977

TABLE III-D-5

Estimated Annual Maintenance Costs (1)

(1978-1990)

(000's of current U.S. dollars)

80	81	82	83	84	85
*	*	*	116.0**	177.1	203.6
86	97	88	89	90	
233.7	273.6	320.4	377	451.4	

* Contractor's responsibility

** GOL responsibility for nine months beginning April, 1983.

(1) Inflation factor calculated @ 12% compounded annually.

If one assumes that the MOW maintenance budget will grow at a minimum of 12 percent per annum from the 1977/78 base, maintenance for this road would call for approximately 4 percent of the total MOW maintenance budget in 1983, certainly a supportable financial load.

However, a caveat must be made in regard to maintenance costs. The Berger study calculated maintenance costs at what it termed "reasonable" equipment rental rates.

The Government's Plant Pool presently rents equipment and vehicles to government agencies at rates calculated to ammortize their equipment quickly, sometimes within two years. These hourly rates are between 73-103 percent higher than equipment rental rates in South Africa. The higher rates are partially justified because equipment and vehicle repair in Lesotho is less efficient than in South Africa; however, the Berger report recommends lower and more "realistic" rental rates. Should present rates not be modified the annual maintenance costs will be from 50-100 percent higher than those used in Table III-D-5. An in-depth study of the Plant Pool is presently underway and it is anticipated that the study's recommendations, if adopted, will lead to more realistic rental rates for road maintenance equipment.

Table III-D-6 - Equipment Rental Rates (per hour)

	Plant Pool	Average R.S.A.	% Difference
Dozer w/Ripper (07F)	R 39.8	R 22.4	78%
Tandrum Roller (12-14 ton)	9.76	4.8	103%
Motor Grader (Gallion T-600)	23.53	13.6	73%
Wheel Loader (FA-605-B)	19.65	10.4	89%

In sum, the GOL does not have the financial resources to contribute significantly to the capital costs of the project, but should have sufficient recurrent revenues to finance the estimated maintenance costs of the road.

IV. IMPLEMENTATION PLANNING

A. Administrative Responsibilities and Capacities

Project implementation begins with obligation of AID funds by the signature of a Project Agreement for bilateral projects, and ends on the date all services financed under the project have been performed and all goods financed under the project have been furnished. By definition this ending date is referred to as the Project Assistance Completion Date (PACD).

The plan for this project is to schedule the signing of the Project Agreement on July 10, 1978 and schedule the PACD on May 1983, for an implementation period of 58 months. Within this implementation period, major actions for procurement of services for engineering design and supervision and inspection of construction, and construction of the project have been scheduled. These procurement actions and execution of services to be rendered under these contracts will constitute the principal implementation actions required to complete the project.

After consultation with principal officials of the GOL and Ministry of Works, it has been agreed that the GOL, through its Ministry of Works (MOW) will be responsible for implementation of the project, subject to legislative requirements of the FAA and AID policies and directives governing supporting assistance grants under which this project is proposed for funding. This decision conforms to AID policy that the procurement of AID-financed goods and services required to implement bilateral project agreements be undertaken by Borrower/Grantees rather than by A.I.D.

1. Government of Lesotho:

The Ministry of Works and the MOW's Road Branch will be the institutions primarily responsible for project implementation. The Road Branch is headed by the Chief Roads Engineer who is responsible to the Minister of Works through his Permanent Secretary for Works and the Controller of Works Services. Organizationally, the Roads Branch is to plan, construct, and maintain the roads and land communications throughout Lesotho and its connecting links with South Africa. The Branch also undertakes additional duties such as construction and maintenance of airfields, storm-water drainage, general civil engineering works, and technical and administrative services.

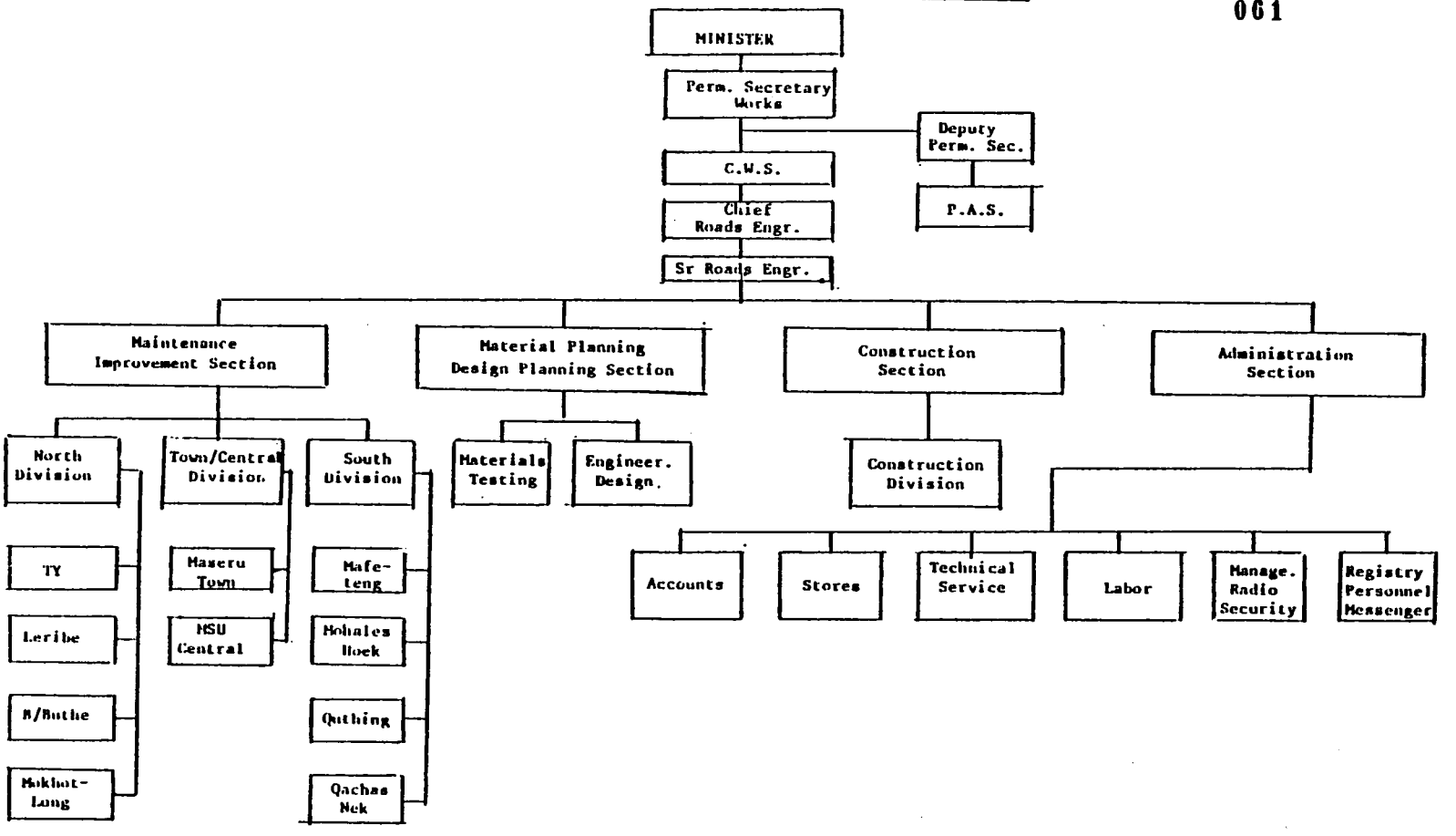
Principals and staff of the Roads Branch have had extensive experience with donor-financed road building projects and road maintenance projects and are considered capable of administering project implementation activities and actions. Especially for the past three years, these officers have been heavily involved with coordination and implementation of other donor funded road projects for Lesotho which involved feasibility studies, road designs, supervision and inspection, construction, and maintenance of roads. Other donors have been the United Kingdom, the African Development Bank, the EEC, the I.D.A., and CIDA, as well as some individual European nations.

All of the negotiations and administration for these projects involve highly technical documents and require inputs by knowledgeable and experienced professional engineers and officers. Principals of the Road Branch, supported by the offices of the Permanent Secretary and the Controller of Works, are deemed qualified to administer to the requirements of the project. It should also be noted that the Roads Branch is an operational Branch, with its own sections and sub-divisions which, in turn, have assigned functional responsibilities for maintenance and upgrading of roads in the northern, central, and southern sectors of Lesotho, for materials testing, construction, and administration which includes financial accounts, stores and inventory control, technical services, labor, management, communications, security and registries and personnel.

The Ministry of Works with its support staff and principally through its Roads Branch will be responsible for meeting administrative requirements of the project. The Ministry of Planning and the Ministry of Finance will also be involved in limited aspects of the project. The above ministries also have had extensive experiences with the planning and execution of donor funded projects, and no insuperable problems are expected to arise in their implementation of the project.

MINISTRY OF WORKS
ROADS BRANCH

CHART IV-1



The major implementation actions under the charge of the GOL will be to procure and manage services for engineering and construction. Many actions, reviews, discussions and decisions will be required during the implementation period. There is an organized administrative system with appropriate authority in the MOW which we believe is satisfactory for the successful implementation of the project.

Leadership in the Roads Branch and within the MOW is considered good and responsibilities and authority appear to have been appropriately delegated. Technical matters are the responsibility of the Roads Branch and matters of policy are the responsibility of the Permanent Secretary and the Minister. The MOW is an integral part of the Government and the Roads Branch, because of its prime function to maintain and upgrade the national roads and tracks, budgets for and receives annual allocations from the Government. Twenty Basotho are currently in long-term engineering training abroad many of whom are expected to be assigned to the MOW upon their return beginning in 1979. Additionally, the Government has stressed that this project is its highest priority project and it therefore enjoys the attention of the highest circles in government.

2. AID.

In a general sense, AID's administrative responsibilities will be to monitor all project activities during the implementation period, perform evaluations on a scheduled basis, disburse necessary funds, review and approve procurement actions by the GOL, and provide required and other reports

Monitoring will be accomplished principally by the AID direct-hire engineer presently assigned to Lesotho supported by REDSO/EA staff, i.e., engineering staff, contract officer, legal officer. Project financial management will initially be the responsibility of the OSARAC Controller but will be transferred to Maseru when a Controller arrives at post in early FY 79. The AID staff will be adequate to ensure that the project will be successfully implemented in the most efficient manner possible.

B. Implementation Plan.

Because of the emergency nature of this project, various expedited schedules were considered for procurement and implementation.

1. Procurement Plan:

The GOL will be the authorized agent for procurement actions and the U.S. will be the prime source for services and equipment and materials. However, waiver requirements for procurement of some bulk goods such as cement POL, asphalt, steel, etc., from a neighboring Code 935 country (South Africa) will be required. Procurement and implementation schedules have been prepared for incorporation into project documents in consultation with the Grantee.

Since the MOW has had no previous experiences with AID's country contracting guidelines, pre-implementation actions are currently being taken by AID in collaboration with MOW personnel to expedite initial implementation once the project is authorized. A complete RFP (Request for Technical Proposals) is being prepared at this time with the intent of finalizing and issuing the RFP to obtain engineering services as early as possible.

The project procurement plan begins with procurement of engineering services and ends with completion of construction services.

Although all procurement will be monitored to ensure conformance with AID's procurement and sources requirements, the plan below is for those actions for which the GOL is responsible.

Procurement Plan

April 1978 Pre-implementation action. Begin preparation of RFP for engineering services for engineering design of the complete road from Mohale's Hoek to Qacha's Nek and for supervision and inspection of construction of the road from Quthing to Qacha's Nek. REDSO/EA Contract Officer will assist on TDY basis. Final statement of work contingent on amount of funding authorized but will include the following:

- Final design and preparation of bid tender documents for Code 941 competition for road from Quthing to Qacha's Nek.

- Final design and preparation of a separate bid tender document for the segment between Mohale's

	Hoek to Quthing.
	- Supervision and inspection of construction for construction of Quthing to Qacha's Nek road.
June 21, 1978	Publish Commerce Business Daily Notice advertising RFP for engineering services as above. DS/ENGR, AID/W, to distribute RFP to interested firms. (Code 000 source).
August 5, 1978	Technical proposals with latest postmark of August 5 mailed in U.S. and subsequently received in MOW. One copy furnished to AID/W and one copy to Mission and one copy to REDSO.
August 19, 1978	Detailed Technical Proposals received in MOW, GOL.
September 2, 1978	Consultants for engineering services rank ordered to first, second and third. Cost proposal then requested of first choice firm and negotiations subsequently conducted.
September 13, 1978	Contract negotiations completed and contract signed.
October 23, 1978	Engineering contractor mobilized.
June 23, 1979	Final design field work completed.
July 14, 1979	AID review completed.
July 30, 1979	Commerce Business Daily Notice published for construction bids, prequalification pro instituted as appropriate.
October 30, 1979	Tenders in for construction and subsequently evaluated, and contractor selected.
November 30, 1979	Contract awarded for construction.
May 1982	Construction completed.
May 1983	One year road maintenance responsibility completed by contractor.

2. Disbursement Procedures:

Based on Appendix 5K, HB-3, Project Assistance, the

Direct letter of Commitment whereby L/COMS are issued directly by AID/W to the contractors has been selected as the method of disbursing funds. In the interest of expediting payment vouchers, Mission recommends dollar payments be made initially through OSARAC/Mbabane to be eventually transferred to USAID/Maseru. Direct Letters of Commitments will specify respective dollar limits. An initial advance will be made to the construction contractor. Procedures for disbursement of the GOL cash contribution to the project will be outlined in Project Implementation Letter No. 1.

3. Implementation Schedule:

a. Pre-implementation actions:

March 20, 1978 Draft feasibility report submitted by consultant.

March 25, AID and GOL comments provided Berger consultants.

April 24, 1978 Draft Project Paper complete. Subsequently reviewed by GOL for concurrences.

May 16, 1978 Final report of study submitted (40 copies to Mission and 60 copies to AID/W for use with RFP issuance).

May 26, 1978 Project Paper in AID/Washington.

June 26, 1978 Project Paper approved and funding subsequently authorized following Congressional notification.

b. Implementation Actions:

July 10, 1978 Project Agreement signed (Note: During above period, other procurement pre-implementation actions taken per procurement schedule above).

July 30, 1978 GOL meets conditions precedent of Project Agreement.

August 19, 1978 Engineering proposals received at GOL.

September 2, 1978 Engineering consultants rank ordered

and selection made.

September 13, 1978 Contract signed with engineering firm.

October 23, 1978 Engineering consultant mobilized.

June 23, 1979 Final design completed.

July 14, 1979 AID review completed.

July 30, 1979 CBD Notice published for construction.

October 30, 1979 Tenders in for construction evaluated, selection made.

November 30, 1979 Construction contract awarded.

May 1982 Construction complete (30 mo. contract).

May 1983 Maintenance period completed by construction contractor.

4. Justification for Waivers.

A waiver of source and origin requirements under AID Handbook 15 and 1 (Supplement B) for procurement of bulk commodities valued at approximately $2,250,000 from Code 935 sources is considered necessary to avoid excessive costs to the construction contract.

In addition, a waiver for deviation from policy in AID Handbook 11 regarding employment of nationals from non-eligible countries is requested.

a. Justification for Waiver of Policy to Permit Procurement of bulk commodities from Code 935 Sources:

Waiver approval is required to permit the contractor to procure bulk goods for construction such as cement, lumber, asphalt, steel, POL, and other miscellaneous equipment from Code 935 source. Imports of these bulk construction materials from the U.S. in quantities sufficient for the 30 month construction period

will cause an unnecessary financial burden on the project since these materials are readily available in South Africa. Should procurement be from Code 000, the contractor will be forced to transport the material firstly by ocean to South Africa and secondly by land to various storage locations along the road alignment. Larger storage sites will have to be prepared as well as provision of facilities and personnel for security of the materials. All of those materials are readily available within three to six hours driving distance from Lesotho and can be easily procured in South Africa and transported to construction sites when required. Costs for storage sites will accordingly be reduced as well as for transportation of material. Investment in equipment to transport of material will also be reduced since the suppliers can be required to deliver needed material to the project site. These materials, in the quantities needed for this project, are not kept off-shelf in Lesotho nor is a continuous availability of supply assured. It is estimated that bulk commodities and other miscellaneous equipment of this nature will cost approximately $3,700,000 during the project. The GOL contribution will cover approximately $1,450,000 of these costs and the costs of vehicles and miscellaneous goods and services procured from South Africa. However AID funds must be used to finance approximately $2,250,000 in bulk commodities for project use.

b. Justification for Deviation from Policy in AID Handbook 11 Regarding Employment of Nationals from Non-eligible Source Countries:

Although source for construction services is Code 941, authority is requested to deviate from the policy contained in Handbook 11 which limits employment of nationals from non-eligible source countries to 20 percent of the non-local work force. The consultant's feasibility report indicated that construction costs by a U.S. contractor who is permitted unlimited use of nationals from non-eligible source countries will be less by at least 15 percent from costs by a U.S. contractor who is limited in usage of such persons to not more than 20 percent of his work force (other than citizens or permanent residents of Lesotho). This indication is further reinforced by the consultant's estimate, that an international contractor's cost for the same work will be even less than the U.S. contractor who is permitted unlimited use of nationals from non-eligible

source countries. Key personnel, however, will be nationals of the U.S. As the Berger report indicates, the availability of qualified nationals from Code 941 or Lesotho sources is extremely limited or, in some case non-existent. Thus, the alternative is to either require that these middle-level jobs be filled by U.S. nationals, thereby increasing costs in excess of 15 percent, or allow the project to deviate from Handbook 11 policy and use nationals from non-eligible source countries and thereby reduce project costs considerably.

On the basis of the above and the information contained in the Berger report, it is requested that the deviation be granted.

C. Evaluation Plan.

Project evaluation procedures based substantially on appropriate evaluation factors in Section 5.1, Project Evaluation, Handbook 3, Project Assistance, will be incorporated in the Project Agreement. It should be noted, however, that since the project is a capital project for a road (which will not be completed until the end of the implementation period) evaluation of the impact of the project will still be based on assumptions until long after the road construction is completed. Annual evaluation will focus on physical progress and constraints inhibiting progress and/or attainment of objectives. In addition, OSARAC will request REDSO/EA or AFR research funds to finance a detailed baseline socio-economic survey of the zone of influence. In 1988, a follow-up study will attempt to measure socio-economic change in the region to determine what changes can be attributed to the presence of an upgraded Southern Perimeter Road.

D. Conditions, Covenants and Negotiating Status.

The Project Agreement will include the following initial conditions precedent:

1. GOL legal opinion on the validity of the Project Agreement.

2. Designation of GOL representatives and provision of specimen signatures.

3. Submission of a contract for design and engineering services satisfactory to A.I.D. with a firm satisfactory to A.I.D.

In addition, as a CP to disbursement for construction the GOL must submit a contract for construction services satisfactory to A.I.D with a firm satisfactory to A.I.D.

It is proposed that the following covenants be included in the Project Agreement:

1. The Grantee will covenant to provide all necessary personnel to support and monitor the design, supervision and construction services financed under the project;

2. The Grantee will covenant to provide the services of an archeologist or other appropriate personnel to work with the design contractor to identify and preserve, to the maximum extent possible, paleontological and archeological sites located along the route of the AID-financed construction. The Grantee will also covenant to

provide guardians and maintenance of fencing around five to seven key sites, and assume all other responsibilities for preservation of these sites not borne by A.I.D.

3. The Grantee will covenant that it will budget, for the period beginning at the Project Assistance Completion Date, funds necessary to adequately maintain the project road.

4. The Grantee will covenant that it will consult with A.I.D. representatives on a periodic basis to discuss appropriate measures to enhance its capacity to maintain its road network. Such discussions would include, inter alia, the adequacy and allocation of the Grantee's budget for road maintenance, personnel recruitment, and implementation of recommendations stemming from studies of the Grantee's maintenance and equipment rental policies.

5. The Grantee will covenant to provide AID with a financial plan acceptable to AID within 60 days of signature of the project agreement. The plan will detail the source, availability and uses of the Government of Lesotho's cash contribution ($5 million equivalent in Rand) to the project.

The scope of the project, its feasibility and scheduling has been fully discussed with the GOL. The GOL Ministries of Works and Finance have reviewed a draft of this project paper and concur with its contents.

ANNEX V-A

GOL REQUEST FOR ASSISTANCE

The Government of Lesotho request for assistance in up-grading the Southern Perimeter Road was presented to the United States and the donor community as part of an emergency UN-sponsored appeal in April 1977. Following the preparation of a UN Security Council report entitled Assistance to Lesotho (S/12315, 30 March 1977) by a UN-sponsored mission to Lesotho led by UN Assistant Secretary-General Farah, a donor pledging conference was held at UN Headquarters on June 6, 1977. The report recommended, inter alia, up-grading the Southern Perimeter Road on an emergency basis. At that meeting the U.S. Government indicated that it would seriously consider assistance to improve the road and that an AID team would visit Lesotho within a few weeks to carry-out an initial reconnaissance of the existing road.

Since that time the Government of Lesotho has many times formally and informally indicated its desire that the U.S. Government finance the up-grading of the Southern Perimeter Road and has worked very closely with OSARAC in the preparation of this project.

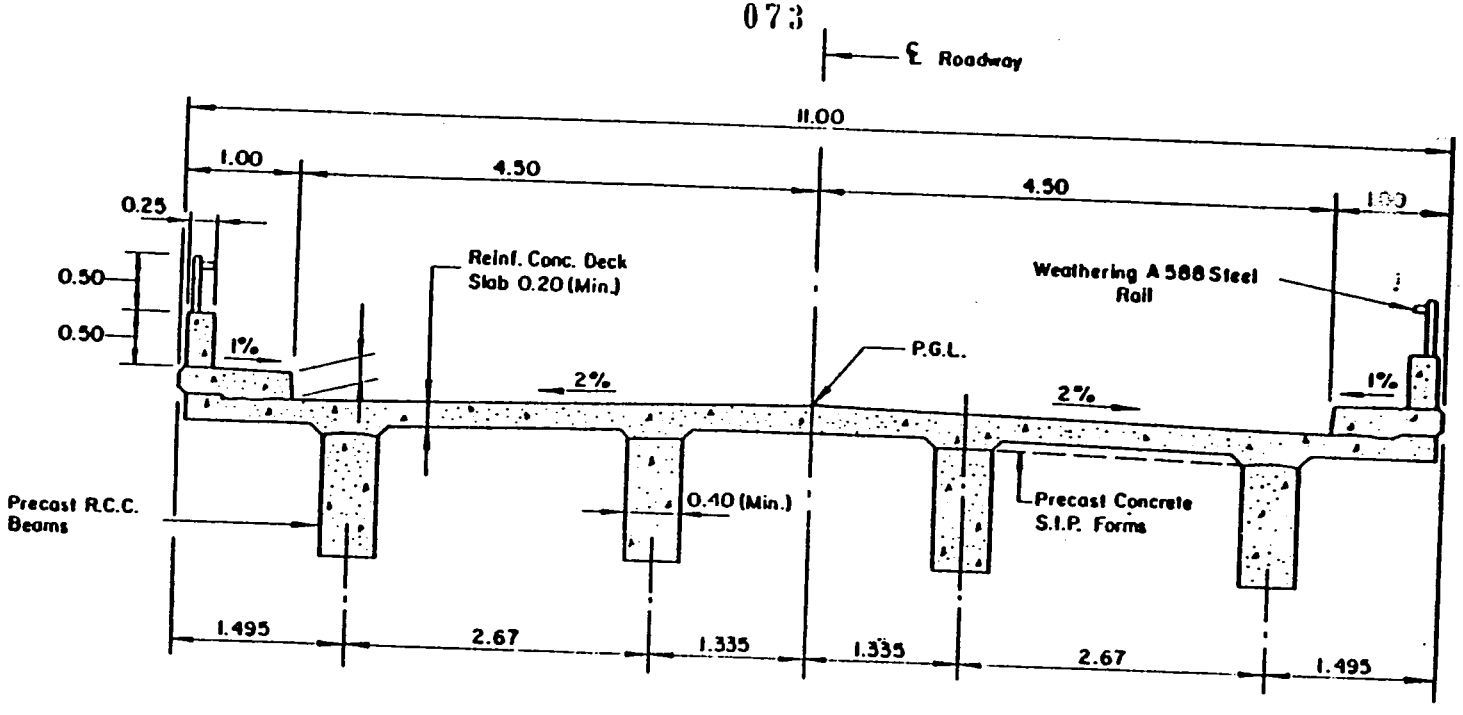
SECTION 611(e) CERTIFICATION

SOUTHERN PERIMETER ROAD PROJECT - LESOTHO

I, John H. Kean, the principal officer of the Agency for International Development in the Southern Africa Region (OSARAC), having taken into account, among other things, the maintenance and utilization, of projects in Lesotho previously financed or assisted by the United States, commitments by the Government of Lesotho to provide by the end of the project adequate resources to maintain the project road, the likelihood of A.I.D. and/or other donor support for projects to improve Lesotho's road maintenance capability, and the Government of Lesotho's present commitment of resources to road maintenance activities, do hereby certify that in my judgment the Government of Lesotho has both the financial capability and human resource capability to effectively maintain and utilize the capital assistance to be carried out under this project.

John H. Kean
Regional Development Officer

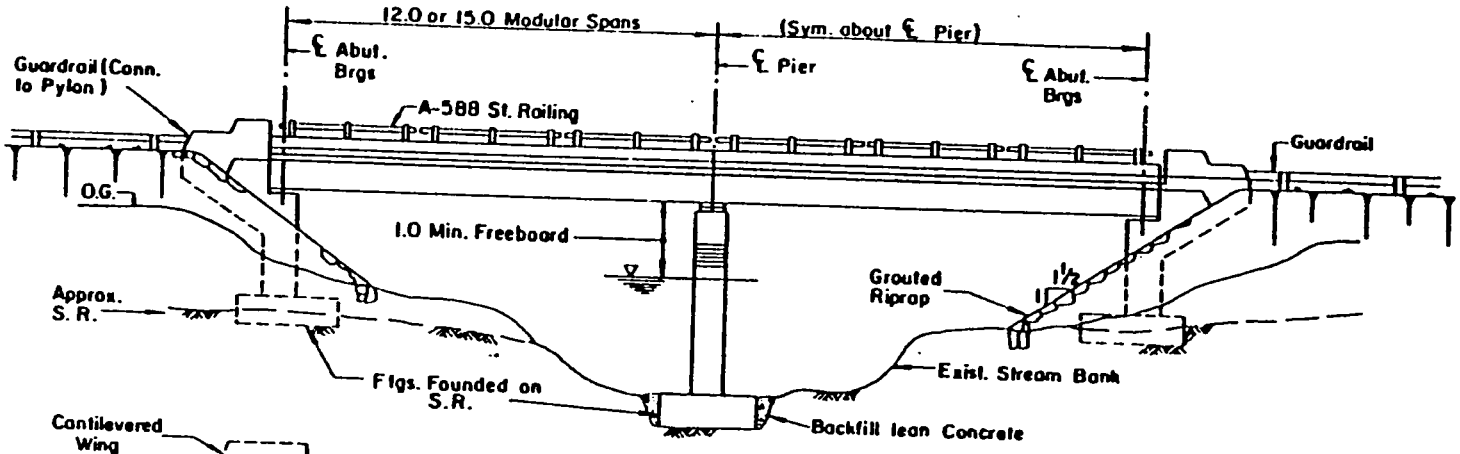
Date: 22 May 1978



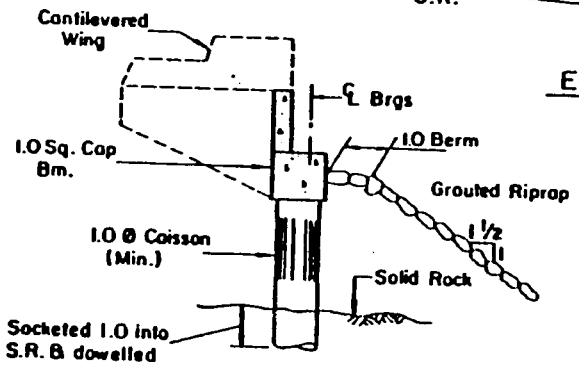
TYPICAL SECTION

V-C-1

Note: Design Stresses : A.A.S.H.T.O. current edition.
Concrete: Superstructure f'_c = 24 MN/m^2 (3500psi) Min.
Substructure f'_c = 21 MN/m^2 (3 000psi)
Reinforcing Steel : ASTM A615, Gr. 60 f_y = 414 MN/m^2 (60 000psi)



ELEVATION



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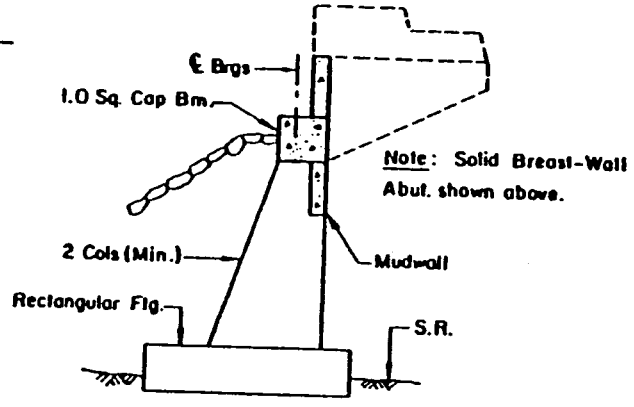

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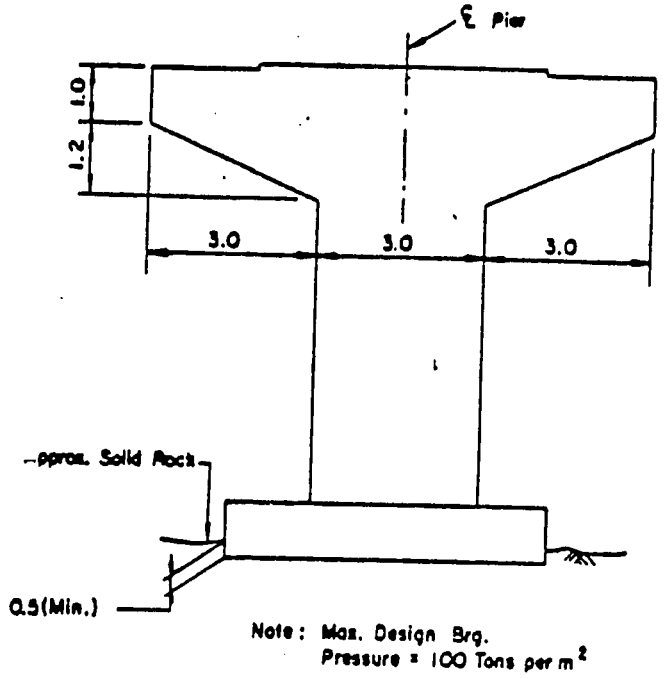
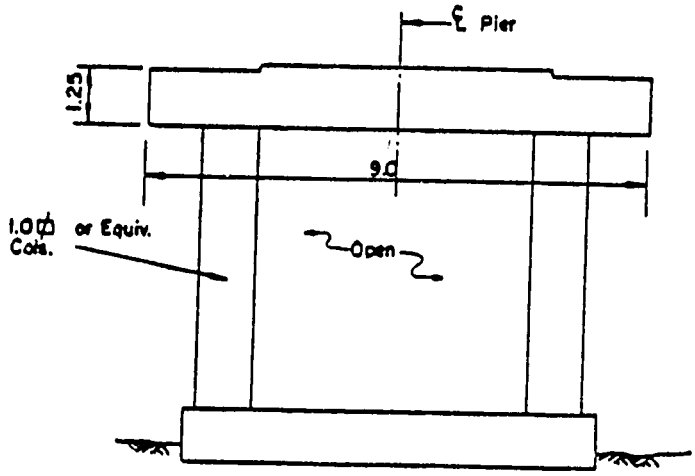
V-C-2

ABUTMENT TYPES

Figure III - 6

Figure III - 7





V-C-3

PIER TYPES

V-C-4

MINISTRY OF WORKS CIRCULAR NOTICE NO. 14 OF 1976

W/CMW/P/POL/12

MINISTRY OF WORKS,
MECHANICAL BRANCH,
P.O. BOX MS 56,
MASERU.

21ST OCTOBER 1976.

TO ALL: PERMANENT SECRETARIES
HEADS OF DEPARTMENTS
DISTRICT ADMINISTRATORS
BRANCH HEADS.

GOVERNMENT PLANT POOL REVISED HIRE CHARGES

In order to be able to contend with the escalating purchasing costs of capital equipment and spare parts it has been necessary in some instances to raise hire charges in respect of certain items of plant held on charge within the Government Plant Pool. Such increases are shown in the attached schedules together with items of plant whose hire charge rates have remained as heretofore. Where it has been possible to absorb slight increases in capital costs this has been done.

The revised charges are promulgated in accordance with the terms contained in paragraph 9 (d) of the Government Plant Pool Fund. Regulations 1972 which are contained in Legal Notice No. 13 of 1972.

As a result of experience gained since assuming responsibility in March of 1975 for operators of stepped plant it has been established that the charge of R1.25 per hour which was imposed has been inadequate to keep an in-balance in this side of the Fund and as a consequence it has been necessary to increase the charge to R2.50 per hour effective from the 21st September 1976.

R.E. JOY
for PERMANENT SECRETARY FOR WORKS.

MECHANICAL BRANCH

MINISTRY OF WORKS

Typical construction equipment hire charges—EFF Date 21 March 1977 (not including operator and/or fuel) - Per MOW Notice No. 14, 21 October 1976 -

LXA NO.	DESCRIPTION	RATE/HOUR ✱
4521	Caterpillar D7/F with Ripper	R39.80
4545	Komatsu D65E	R32.86
3040	Grader, Galion T600	R23.53
4551	Aveling Barford Super 700 Grader	R28.49
3039	Grader, Galion T500	R19.96
4049	Galion, Roll-O-Matic, 4-6 ton	R 6.84
5020	Galion, Chief Roller, 12-14 ton	R 9.76
5022	Galion, Tandem Roller 8-12 ton	R 8.56
331	Compressor, 600 C.F.M.	R14.32
1316	Compressor, 260 C.F.M.	R 5.40
5015	Phoenix Chip Spreader	R11.47

✱ Above rates are 73 to 103% higher than rates in R.S.A. for similar equipment.

Properties of Soils found along the Road

Preliminary information obtained from field work and various sources indicates the following major soil types that will be encountered along the route.

Soils Series	Areal Distribution(%)
Ntsi, Berea, Maseru	75
Popa, Fusi	24
Phechela	1

Although the above classifications are basically for agricultural use, available soil survey data on these soils include soil properties that are significant to engineering uses. These are provided in the following charts.

Soil Series: NTSI (HE) (an)

Hydrologic Group: D

SOIL SURVEY INTERPRETATION
(SECTION)

Date: 20/1/76

Soil Properties Significant to Engineering Use.

Author(s): GROUP MEETING.

Major Horizons (cm.)	CLASSIFICATION: USDA	UNIFIED	AASHO	Coarse Fraction 7½ cm. (%)	Passing Sieve No. 10 %	35 %	60 %	140 %	270 %	Liquid Limit and Plastic Index LL	PI	Permeability (cm/hr.)	Avail Water Capacity cm/cm.	Soil Reaction (pH)	Shrink-Swell Potential	O.M. %	Max. dry Density	CORROSIVITY Uncoated Steel	Concrete
0-27	lfs	SM	A-2-4	0	100	95-100	45-95	30-45	20-30	27	NP	5-15	.06-.09	5.5-6.0	Low	2-4	1.6	Low	Moderate

DEPTH TO BEDROCK: 10 - 50 cm.
DEPTH TO SEASONAL HIGH WATERTABLE: No- Watertable
FLOODING HAZARD: None - SUSCEPTIBILITY TO EROSION - STREAM: None DCNGA: None UPLANDS: Occasional SHEET: Moderate WIND: High

SUITABILITY OF SOIL AS SOURCE OF SELECTED MATERIAL AND FEATURES AFFECTING USE

SAND: Poor - Limited soil depth and loamy fine sand texture.
GRAVEL: Poor - More than 15 percent silt in loamy fine sand texture.
TOPSOIL: Good - But has limited soil depth as borrow material.
DIKES, EMBANKMENTS, DIKES, LEVEES: Fair - Medium shear strength and susceptible to piping, shallow to rock.

TYPES OF SOIL LIMITATION:

ROAD BASES AND SUBGRADES: Severe - Where ever cuts are needed. Shallow to rock.
SANITARY LANDFILL: Severe - Shallow to rock.
DWELLINGS & BUILDING SUPPORT ON SOIL MATERIAL: Slight - for local housing except for areas with steep slopes
SEPTIC TANK ABSORPTION FIELDS: Severe - Shallow to rock and seepage along bedrock plain.
SEWAGE LAGOONS: Severe - Shallow to rock and steeness of slope. Seepage along bedrock plain

MAIN SOIL FEATURES AFFECTING SELECTED USE

ROAD BASES AND SUBGRADES: Shallow to rock, rapid permeable soil, and susceptible to piping along bedrock.
SANITARY LANDFILL: Shallow to rock, high seepage loss, steep slopes and susceptible to piping.
DWELLINGS: Shallow depth to rock, low water storage capacity, steepness of slope.
SEWAGE LAGOONS: Shallow depth to rock and some steep slopes -
SEWAGE WATERWAYS: Shallow depth to rock - Sandy textures - That erode easily.
DRAINAGE OF CROPLAND AND PASTURE: Not Needed -

GPL

Soil Series: PIECHELA (Pe) (Ph)

Hydrologic Group: D

SOIL SURVEY INTERPRETATION

(FSO-10)

Date: 2/12/75

Author(s): GROUP.

Soil Properties Significant to Engineering Use.

Major Horizons (cm.)	CLASSIFICATION USDA	UNIFIED	AASHO	Coarse Fraction 7½ cm. (%)	Passing Sieve No. 10 %	35 %	60 %	140 %	270 %	Liquid Limit and Plastic Index LL	PI	Permeability (cm/hr.)	Avail Water Capacity cm/cm.	Soil Reaction (pH)	Shrink-Swell Potential	O.M. %	Max. dry Density	CORROSIVITY Uncoated Steel	Concrete
0-100	C	MH	A-7	0	100	99-100	97-99	95-97	80-95	81	26	0.15-0.4	0.08-0.15	5.5-6.9	High	2.0-5.0	1.5-1.8	High	Low
100-130+	C	CH	A-7	0	100	100	98-100	95-98	85-95	75	42	0.01-0.05	0.07-0.1	6.5-7.8	High	0.5-2.0	1.6	High	Low

DEPTH TO BEDROCK: More than 2 meters

DEPTH TO SEASONAL HIGH WATERTABLE: 0-50 cm. During wet season -

FLOODING HAZARD SLOPE: -

SUSCEPTIBILITY TO EROSION: -

STREAM: Intermittent (Local)

GULLY: Severe

SHEET: Moderate

UPLANDS: Very frequent.

WIND: Slight

SUITABILITY OF SOIL AS SOURCE OF SELECTED MATERIAL AND FEATURES AFFECTING USE

TOPSOIL: Poor - High clay content and very hard when dry -

SAND OR GRAVEL: Unsuited - High clay and silt content.

ROADFILL: Poor - High clay content. Poor drainage. Poor bearing strength and poor compaction.

DAMS, EMBANKMENTS, DIKES, LEVEES: Fair - Poor compaction - Use as core material.

DEGREE OF SOIL LIMITATION:

LOCAL ROADS AND STREETS: Severe - Poor drainage, high clay content, poor bearing strength.

SEWAGE EVAPORATION: Severe - High water table and very slow permeability

FOUNDATIONS OF BUILDINGS SUPPORTED ON SOIL MATERIAL: Severe - High shrink - Swell clays poor drainage, flooding.

SEPTIC TANK ABSORPTION FIELDS: Severe - Very slow permeability and high watertable.

SEWAGE LAGOONS: Slight - Good basin areas.

MAJOR SOIL FEATURES AFFECTING SELECTED USE

POND RESERVOIR AREAS: Good storage basins, very slow seepage rate -

EMBANKMENTS, DIKES, LEVEES: High shrink - Swell clays with only fair to poor compressibility.

IRRIGATION: Poor - Slow water intake rate high clay content.

TERRACES AND DIVERSIONS: High shrink - Swell clays causing craking and piping, difficult to work.

GRASSED WATERWAYS: High clay content and hard consistance cause difficulty in preparing seed beds -

DRAINAGE OF CROPLAND AND PASTURE: Internal drainage very difficult surface drainage needed - Very slow hydrolic conductivity.

GPL

Soil Series: EQEA (Pu) (Pp) (Pc) (Pa)

Hydrologic Group: D

SOIL SURVEY INTERPRETATION

Date: 16/12/75

Author(s): GROUP

Soil Properties Significant to Engineering Use.

Major Horizons (cm.)	CLASSIFICATION USDA	CLASSIFICATION UNIFIED	CLASSIFICATION AASHO	Coarse Fraction 7½ cm. (%)	Passing Sieve No. 10 %	35 %	60 %	140 %	270 %	Liquid Limit and Plastic Index LL	PI	Permeability (cm/hr.)	Avail Water Capacity cm/cm.	Soil Reaction (pH)	Shrink-Swell Potential	O.M. %	Max. dry Density	CORROSIVITY Uncoated Steel	CORROSIVITY Concrete
0-30	SIL	ML	A-6	5-20	95-100	90-97	75-90	65-75	55-65	56	12	5-50	.14-.16	6.0-6.4	Low	5-8	1.3	Low	Moderate
30-50	gsl	GM or SM	A-2-4	10-50	80-90	70-80	60-70	50-60	35-50	30	NP	50	.08-0.1	6.0-6.4	Low	4-6	1.6	Low	Moderate

DEPTH TO BEDROCK: 10 - 50 cm.
DEPTH TO SEASONAL HIGH WATERTABLE: No waterable

FLOODING HAZARD FROM: STREAM: None UPLANDS: Moderate overflow.
SUSCEPTIBILITY TO EROSION - DOWN: None SHEET: Moderate WIND: Slight

SUITABILITY OF SOIL AS SOURCE OF SELECTED MATERIAL AND FEATURES AFFECTING USE

TOPSOIL: Poor - Limited soil depth and fine gravel.
SAND OR GRAVEL: Unsuited - More than 15 percent of silt and clay.
ROADFILL: Fair to Good - But has shallow depth to rock, and high organic matter content.
DAMS, EMBANKMENTS, DIKES, LEVEES: Fair for small structures - High organic matter and poor compaction

DEGREE OF SOIL LIMITATION:

LOCAL ROADS AND STREETS: Moderate to severe - Shallow depth to hard rock, high organic matter poor compaction
SHALLOW EXCAVATION: Severe - Shallow depth to hard rock.
DWELLINGS OF BUILDING SUPPORTED ON SOIL MATERIAL: Good for small dwellings, on gentle slopes -
SEPTIC TANK ABSORPTION FIELDS: Severe - Shallow to rock and seepage along bedrock plain.
SEWAGE LAGOONS: Severe - Shallow to rock, steep slopes and seepage along bedrock plain

MAJOR SOIL FEATURES AFFECTING SELECTED USE

POND RESERVOIR AREAS: Steep slopes; Limited soil depth and seepage along bedrock plain.
EMBANKMENTS, DIKES, LEVEES: Limited soil depth - High organic matter, high seepage rate along bedrock
IRRIGATION: Unsuited - Shallow to rock, steep slopes, low water storage capacity.
TERRACES AND DIVERSIONS: Shallow to bedrock, high rock content, and steep slopes -
GRASSED WATERWAYS: Shallow soils - And rock content.
DRAINAGE OF CROPLAND PASTURE: Not needed.

GPL

SOIL SURVEY INTERPRETATION
TESOTRO.

Soil Series: MASERU (Me)

Hydrologic Group: D

Date: 2/12/75

Author(s): GROUP

Soil Properties Significant to Engineering Use.

Major Horizons (cm.)	CLASSIFICATION USDA	CLASSIFICATION UNIFIED	CLASSIFICATION AASHO	Coarse Fraction 7½ cm. (%)	Passing Sieve No. 10 %	35 %	60 %	140 %	270 %	Liquid Limit and Plastic Index LL	PI	Permeability (cm/hr.)	Available Water Capacity cm/cm.	Soil Reaction (pH)	Shrink-Swell Potential	O.M. %	Max. dry Density	CORROSIVITY Uncoated Steel	CORROSIVITY Concrete
0-32	Slcl	CL	A-7	0	99-100	95-100	80-95	70-80	55-70	21	4	0.8-1.6	.16-.18	5.1-5.6	Mod.	0.5-1.5	1.8	V. High	Mod.
32-200	C	CL	A-7	0	100	99-100	98-100	95-98	85-95	35	21	0.01-0.03	0.05-0.1	5.5-6.0	Mod.	0-0.5	2.0	V. High	Mod.

DEPTH TO BEDROCK: More than 1.5 meters

DEPTH TO SEASONAL HIGH WATERTABLE: 0-50 cm. ...ched during wet season.

FLOODING HAZARD: FREQ. -

SUSCEPTIBILITY TO EROSION - STREAM: Seldom DONGA: Very severe UPLANDS: Frequent SHEET: Severe WIND: None

SUITABILITY OF SOIL AS SOURCE OF SELECTED MATERIAL AND FEATURES AFFECTING USE

TOPSOIL: Poor - Shallow to fine clay, low fertility and poor drainage.
SAND OR GRAVEL: Unsuited high silt and clay content.
ROADFILL: Poor - Medium to low shear strength, poor drainage and fair to poor compaction.
DAMS, EMBANKMENTS, DIKES, LEVEES: Good for cores only; Poor for outer layers -

DEGREE OF SOIL LIMITATION:

LOCAL ROADS AND STREETS: Severe - Medium to low shear strength, poor drainage, surface soil saturated during wet season.
SEWAGE LAGOONS: Severe - Highwatertable, frequent overflow and poor drainage.
BUILDINGS OF BUILDING SUPPORTED BY SOIL MATERIAL: Severe - Overflow and poor drainage.
SEPTIC TANK ABSORPTION FIELDS: Severe - Highwater table, very slow permeability, and overflow -
SEWAGE LAGOONS: Slight - Soils are very slowly permeable and would serve as good basins for lagoons.

MAJOR SOIL FEATURES AFFECTING SELECTED USE

FOOD RESERVOIR (PEAT): Soils are very slowly permeable and would serve as good basins for water storage.
EMBANKMENTS, DIKES, LEVEES: Soils have medium to low shear strength and only fair to poor compaction -
IRRIGATION: Poor - Shallow depth to clay, low Available water storage, restricted rooting zone -
TERRACES AND DIVERSIONS: Poor soil stability makes sidging difficult.
GRASSED WATERWAYS: Difficult to prepare seed beds - Soding is recommended.
DRAINAGE OF CROPLAND AND PASTURE: Very slow permeability makes internal drainage difficult. Surface drainage feasible.

Soil Series: MASERU - DARK VARIENT (MA)

Hydrologic Group: D

SOIL SURVEY INTERPRETATION
LESOTHO.

Date: 2/12/75

Author(s): GROUP

Soil Properties Significant to Engineering Use.

Major Horizons (cm.)	Classification: USDA	Classification: UNIFIED	Classification: AASHO	Coarse Fraction 75 cm. (%)	Passing Sieve No. 10 %	35 %	60 %	140 %	270 %	Liquid Limit and Plastic Index: LL	PI	Permeability (cm/hr.)	Avail Water Capacity cm/cm.	Soil Reaction (pH)	Shrink-Swell Potential	O.M. %	Max. dry Density	Corrosivity: Uncoated Steel	Corrosivity: Concrete
0-75	SIL	CL-ML	A-4	0	100	98-100	90-98	80-90	70-80	23	5	1.0-5.0	.16-.18	5.4-5.6	Mod.	1.0-3.0	.6-1.9	High	Mod.
75-90	SIL	CL	A-6	0	100	98-100	90-98	80-90	70-80	20	2	0.5-.15	.14-.16	5.4-5.6	Mod.	0.5-1.0	1.8	High	Mod.
90-200	SIC	CL	A-7	0	100	98-100	95-98	90-95	80-90	41	21	0.12-0.5	.11-.14	5.7-6.9	Mod.	0-0.5	1.9-2.0	High	Low

DEPTH TO BEDROCK: More than 200 cm.

DEPTH TO SEASONAL HIGH WATERTABLE: 0-50 cm. Perched during wet season.

FLOODING HAZARD FROM: -

SUSCEPTIBILITY TO EROSION - STREAM: Occasional DONGA: Very severe UPLANDS: Frequent. SHEET: Severe WIND: Slight.

SUITABILITY OF SOIL AS SOURCE OF SELECTED MATERIAL AND FEATURES AFFECTING USE

TOPSOIL: Poor during the wet season - Good to 60 cm. during the dry season -
SAND OR GRAVEL: Unsuited. more than 70 percent passing No.270 sieve.
ROADFILL: Fair to 70 cm. - Poor below 70 cm.
DAMS, EMBANKMENTS, DIKES, LEVEES: Fair - Medium to low shear strength. Fair to poor compaction.

DEGREE OF SOIL LIMITATION:

FOUNDATIONS FOR STREETS: Severe - Poor drainage and occasional flooding.
SEPTIC TANK ABSORPTION FIELDS: Severe - Poor drainage and occasional flooding.
SUITABILITY OF ABSORPTION SUBSOILS OF SOIL MATERIAL: Severe - Poor drainage and flooding hazard.
SEPTIC TANK ABSORPTION FIELDS: Severe - Poor drainage, slow permeability, and flooding hazard.
SEWAGE LAGOONS: Moderate - Seasonal, water table and pollution hazard.

MAJOR SOIL FEATURES AFFECTING SELECTED USE

POND RESERVOIR AREAS: Natural site favorable for water storage -
EMBANKMENTS, DIKES, LEVEES: Medium to low shear strength. And fair to poor compaction.
IRRIGATION: Slow permeability below the surface and poor drainage.
TERRACES AND DIVERSIONS: Poor drainage, surface outlets and flooding -
GRASSED WATERWAYS: Poor drainage - Soils often wet at seeding time.
DRAINAGE OF CROPLAND AND PASTURE: Slow permeability, surface flooding, availability of outlets.

SPL

Soil Series: FUSI (Fa) (Fu) (Hf) (Pr) (Pa)

Hydrologic Group: B

SOIL SURVEY INTERPRETATION
LEGOTID.

Date: 16/12/75

Soil Properties Significant in Engineering Use.

Author(s): GROUP MEETING.

Major Horizons (cm.)	CLASSIFICATION USDA	CLASSIFICATION UNIFIED	CLASSIFICATION AASHO	Coarse Fraction 7½ cm. (%)	Passing Sieve No. 10 %	35 %	60 %	140 %	270 %	Liquid Limit and Plastic Index LL	PI	Permeability (cm/hr.)	Avail Water Capacity cm/cm.	Soil Reaction (pH)	Shrink-Swell Potential	O.M. %	Max. dry Density	CORROSIVITY Uncoated Steel	CORROSIVITY Concrete
0-35	ycl	OH	A-7	0	75-85	82-85	75-82	65-75	55-65	56	NP	10-20	.15-.17	5.1-5.5	Low	5-10	1.5	Low	Moderate
35-60	Cl	OH	A-7	0	90-95	90-95	85-90	75-85	65-75	56	NP	50	.16-.18	5.1-5.5	Moderate	10-15	1.5	Moderate	Moderate
60-85	L	OL	A-7	0	90-95	90-95	80-90	60-80	50-60	47	NP	15-50	.10-.15	5.1-5.5	Moderate	10-15	1.5	High	Moderate
85-120	yL	ML or OL	A-4 or A-7	0	70-80	75-78	65-75	50-65	40-50	43	NP	10-20	.08-.11	5.5-6.0	Low	5-10	1.7	Moderate	Moderate

DEPTH TO BEDROCK: 100 - 250 cm
DEPTH TO SEASONAL HIGH WATERTABLE: None except a long bedrock plain. FLOODING HAZARD: STREAM: None DONGA: Slight
SUSCEPTIBILITY TO EROSION - UPLANDS: Occasional to frequent SHEET: Slight to Moderate. WIND: Slight

SUITABILITY OF SOIL AS SOURCE OF SELECTED MATERIAL AND FEATURES AFFECTING USE

TOPSOIL: Fair to Good - Depending on gravel content.
SAND OR GRAVEL: Unsuited - High silt and clay content.
ROADFILL: Poor - Low shear strength and poor compaction. High organic silt and clays.
DAMS, EMBANKMENTS, DIKES, LEVEES: Poor - High organic matter, Low shear strength and poor compaction.

DEGREE OF SOIL LIMITATIONS

LOCAL ROADS AND STREETS: Severe - Poor compaction, low shear strength, and high organic matter.
SHALLOW EXCAVATIONS: Moderate - Variable depth to rock and seepage during wet season -
DWELLINGS OR BUILDINGS SUPPORTED ON SOIL MATERIAL: Severe - Low shear strength and high compressability, flooding from uplands.
SEPTIC TANK ABSORPTION FIELDS: Severe - Rapid permeability results in high source of pollution.
SEWAGE LAGOONS: Severe - High organic silts and clays rapid permeability and poor compaction -

MAJOR SOIL FEATURES AFFECTING SELECTED USE

POND RESERVOIR AREAS: High seepage loss from rapid permeability - High organic silts and clays.
EMBANKMENTS, DIKES, LEVEES: High organic silts and clays, rapid permeability, poor compaction and piping.
IRRIGATION: Soil features are favorable to Irrigation - Except steeper slopes.
TERRACES AND DIVERSIONS: Irregular depth to underlying rock and steep slopes -
GRASSED WATERWAYS: Grass can be easily established - Steep slopes cause an erosion hazard.
DRAINAGE OF CROPLAND AND PASTURE: Irregular depth to underlying rock could be a problem in interceptive drains -

OPL

Soil Series: BEREA (Be) (Bb) (Bm) (Bn)

Hydrologic Group: B

SOIL SURVEY INTERPRETATION
LUSCHO.

Date: 12/11/75

Author(s): PC - EM - EJ

Soil Properties Significant to Engineering Use.

Major Horizons (cm.)	CLASSIFICATION USDA	CLASSIFICATION UNIFIED	CLASSIFICATION AASHO	Coarse Fraction 75 cm. (%)	Passing Sieve No. 10 %	35 %	60 %	140 %	270 %	Liquid Limit and Plastic Index L.L.	P.I.	Permeability (cm/hr.)	Avail Water Capacity cm/cm.	Soil Reaction (pH)	Shrink-Swell Potential	O.M. %	Max. dry Density	Corrosivity Uncoated Steel	Corrosivity Concrete
0-20	1	ML	A-4	0	100	100	90-100	60-80	40-60	20	2	7-12	.12-.16	4.4-5.4	Low	1-3	1.7	Mod.	High
20-82	Fel	ML	A-4	0	100	95-100	90-95	60-75	40-60	20	1	7-12	.12-.16	4.4-5.0	Low	0.3-1.2	1.7	Mod.	High
82-150	Fel	ML	A-4	0	97-100	97-100	97-100	60-80	40-55	20	3	0.5-2.5	.12-.16	5.0-5.5	Low	0.0-0.5	1.7	High	High

DEPTH TO BEDROCK: 1 to 3 meters

DEPTH TO SEASONAL HIGH WATERTABLE: 50-100 cm.
Perched from seepage during summer season

FLOODING HAZARD: None -
SUSCEPTIBILITY TO EROSION - STREAM: None
GONGA: Slight
UPLANDS: None
SHEET: Moderate WIND: Moderate

SUITABILITY OF SOIL AS SOURCE OF SELECTED MATERIAL AND FEATURES AFFECTING USE

TOPSOIL: Fair - Soils are friable and easily handle - No more than 30 cm. should be excavated
SAND OR GRAVEL: Gravel - Unsorted, soil has no gravel and 40 to 60 percent of silt plus clay -
BORROW: Fair - Poorly graded sands that erode easily -
DAMS, EMBANKMENTS, DIKES, LEVEES: Fair - Susceptible to piping and embankment erosion

DEGREE OF SOIL LIMITATION:

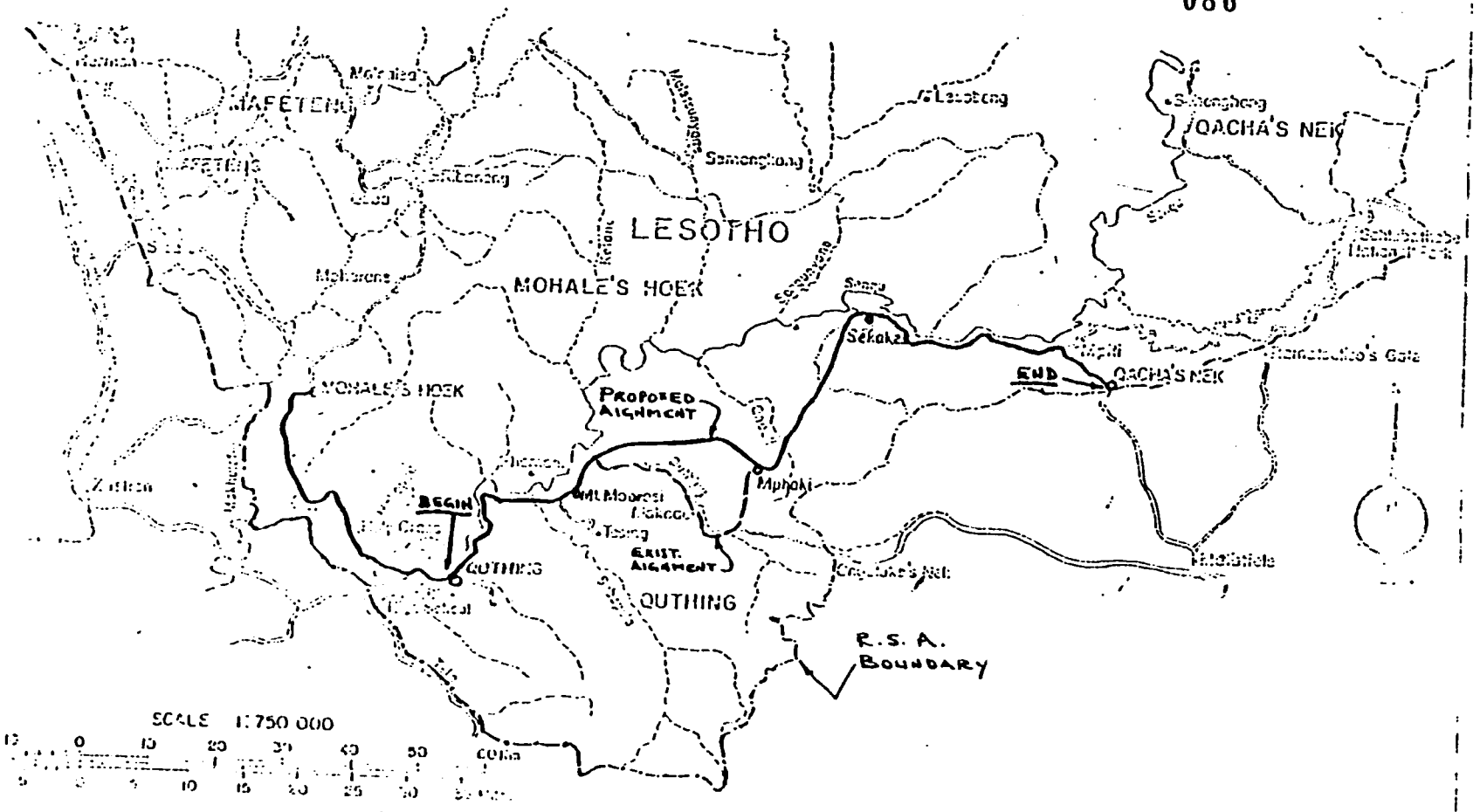
LOCAL ROADS AND STREETS: Moderate - Soils are somewhat poorly drained and medium to low shear strength
SHALLOW EXCAVATION: Moderate - Temporary seasonal water table and occasional rock out crop.
BUILDINGS WITH BASEMENTS SUPPORTED BY SOIL MATERIAL: Moderate - Soils are somewhat poorly drained and occasional rock outcrop
SEPTIC TANK ABSORPTION FIELDS: Severe - Seasonal water table less than 120 cm. and depth to sandstone
SEWAGE LAGOONS: Severe - Depth to seasonal watertable and moderately rapid permeability.

MAJOR SOIL FEATURES AFFECTING SELECTED USE

FARM MACHINERY USES: Moderately rapid permeability, seasonal high water table, 1 to 3 meters to sandstone
LOCAL ROADS, DIKES, LEVEES: Medium to low shear strength, high susceptibility to piping - Fair to poor compaction -
IRRIGATION: Moderate to rapid permeability - Good water storage capacity - Seasonal perched watertable.
TERRACES AND DIVERSIONS: Relatively smooth slopes within each slope group - Variable-depth-to-rock limit to 30 cm. cuts -
GRASSED WATERWAYS: High soil acidity, low soil fertility, moderate to high soil erosion hazard.
DRAINAGE OF CROPLAND AND PASTURE: Perched watertable from seepage - Soils are easily drained.

GPL

PROJECT LOCATION



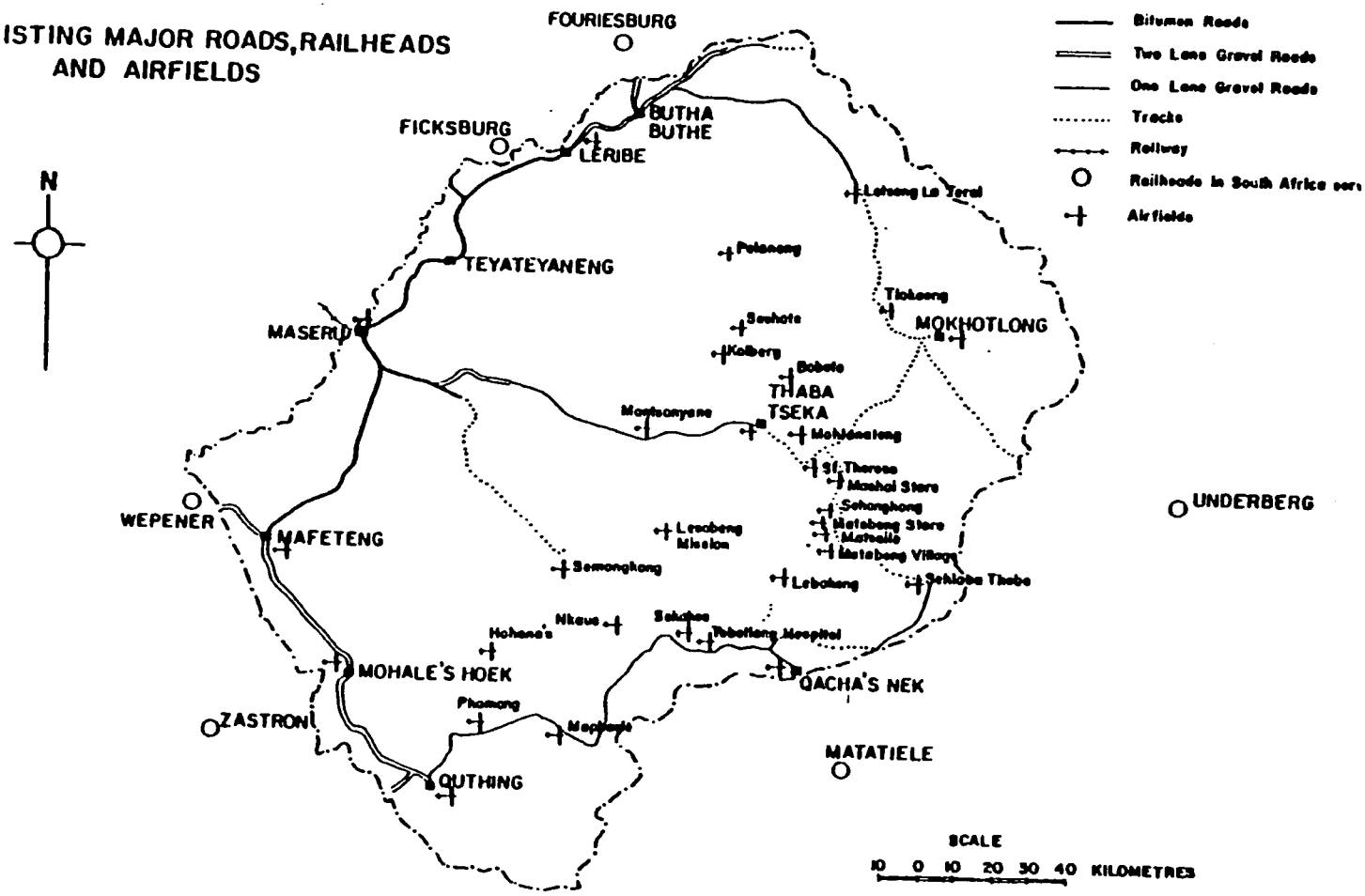
REPUBLIC OF SOUTH AFRICA

LESOTHO IN RELATION TO SOUTH AFRICA

LESOTHO

EXISTING MAJOR ROADS, RAILHEADS AND AIRFIELDS

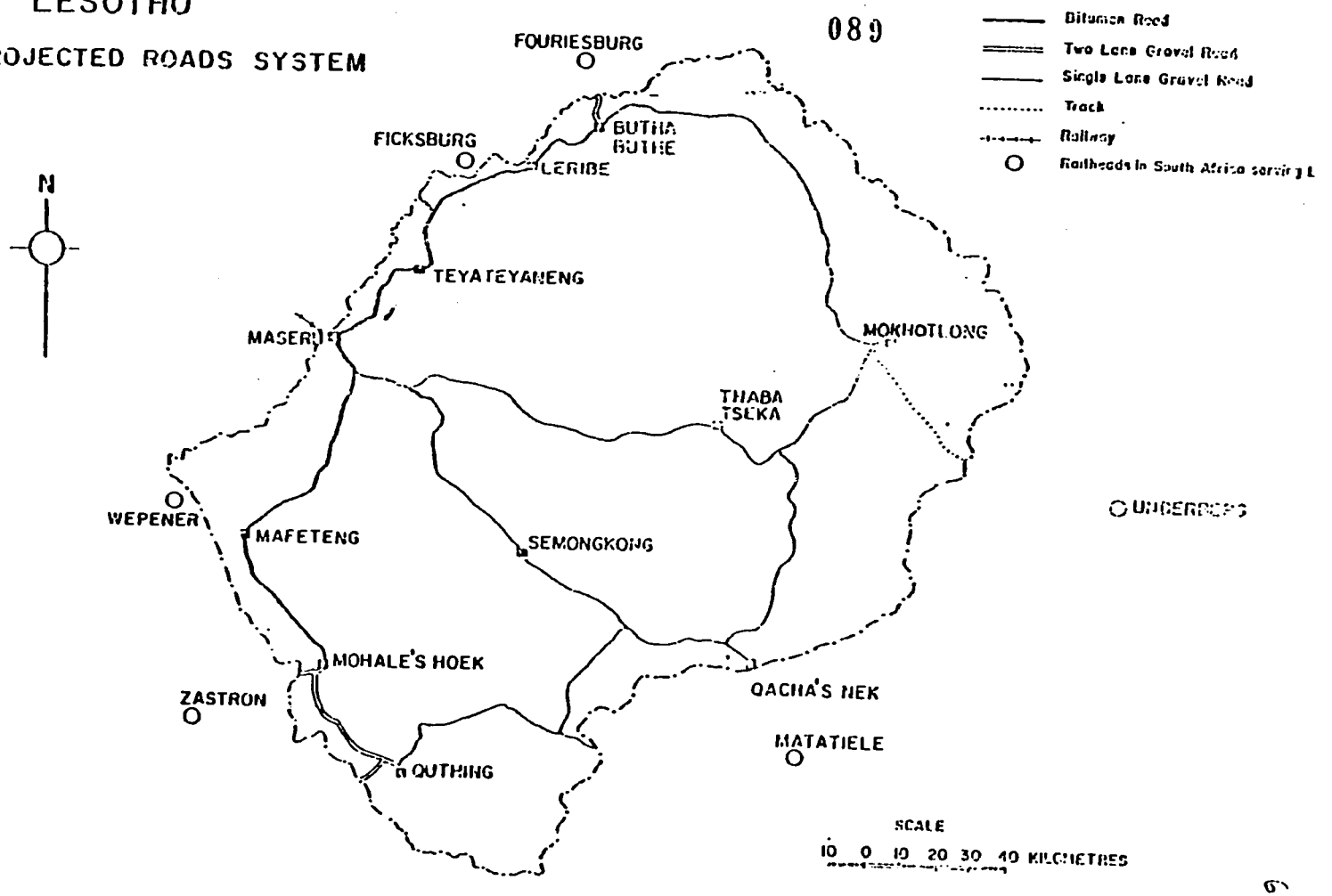
Figure II – 2



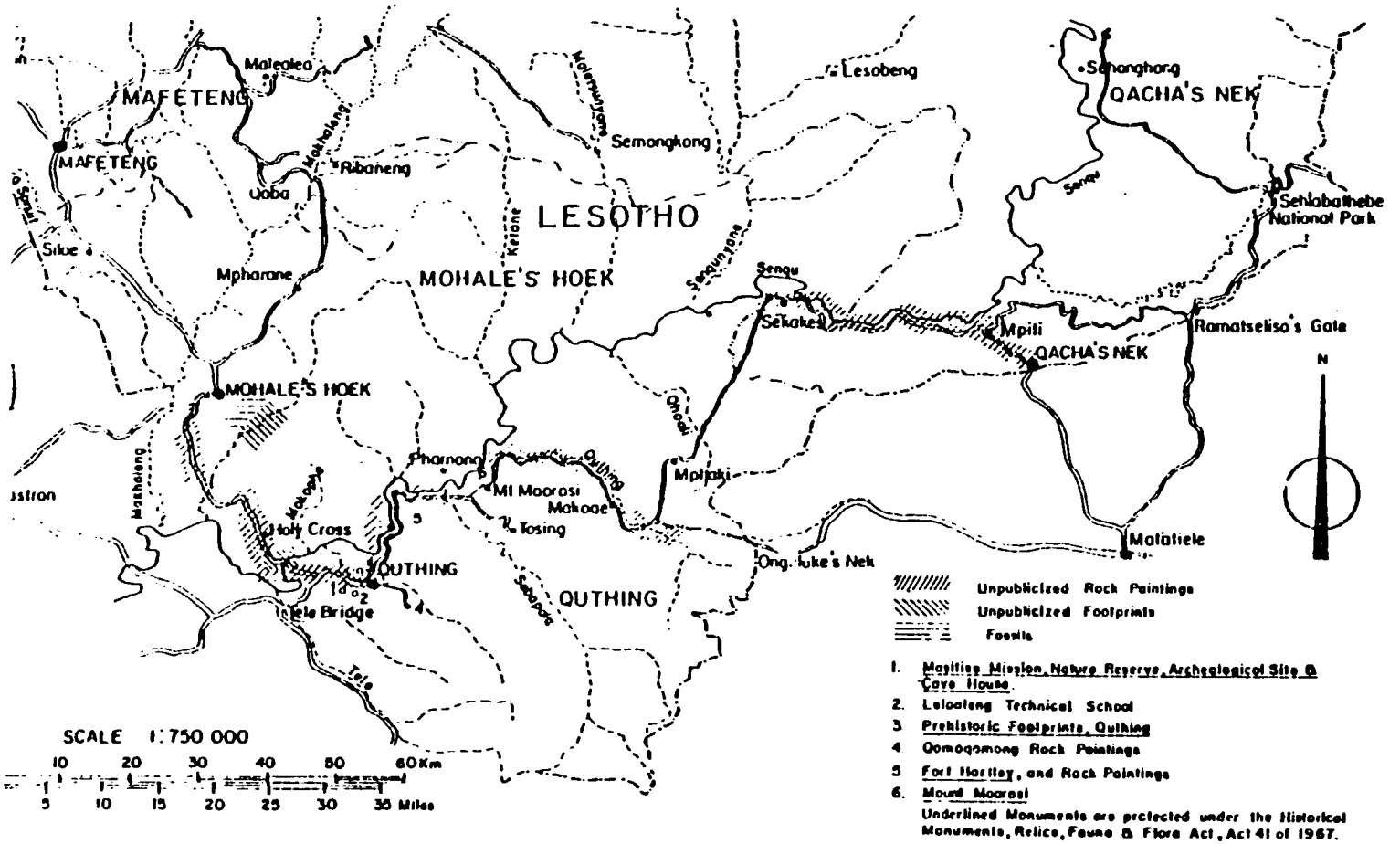
LESOTHO

PROJECTED ROADS SYSTEM

089



HISTORIC MONUMENTS, ROCK PAINTINGS & FOSSILS



1. Masitise Mission, Nature Reserve, Archeological Site & Cave House.
2. Lelaoleng Technical School
3. Prehistoric Footprints, Outhing
4. Qomoqomong Rock Paintings
5. Fort Hartley, and Rock Paintings
6. Mount Moorosi

Underlined Monuments are protected under the Historical Monuments, Relics, Fauna & Flora Act, Act 41 of 1967.

ECONOMIC ANALYSIS

1. Country Economic Setting

a. Physical Setting:

Lesotho has a land area of about 30,350 sq. kms. and is largely mountainous; even the "lowlands" are 1,500 meters or more above sea level. The country is made up of a narrow strip of lowlands along the western and northwestern sides of a hilly and mountainous enclave surrounded by rich South African plains. The only major disconformity is the Senqu (Orange) River Valley that starts in the midst of the mountain mass, proceeding south and west to exist at the southwestern border of Lesotho. The area transversed by the Southern Perimeter Road is mostly tributary to the Senqu (Orange) River system.

Elevations in Lesotho are usually 1,500/2,500 meters. Cultivated lands total about 368,000 hectares, or roughly 12 percent of the national land area. A substantial part of the land, especially at the higher elevations, is used for grazing.

Rainfall in the principal farming areas of Lesotho is normally about 700 mm per year; it occurs mostly in the summer, often in the form of intense thunderstorms. The intensity of the rains, coupled with cultivation of slopes and overgrazing, has resulted in very serious erosion in many areas. It has been estimated that one percent of arable soil is lost each year through erosion.

Rainfall and general climatic conditions vary considerably from year to year and from place to place; periodic droughts, usually averaging one year out of five, are experienced throughout the country. In mountain areas, freezing weather occurs regularly during the winter season.

b. Natural Resources:

Aside from its croplands and grazing areas, Lesotho has few known natural resources other than abundant water in the many streams in the mountains. Unfortunately, agricultural lands have been poorly managed and erosion is widespread despite increasing efforts to control the steadily deteriorating situation. It is generally conceded that as much land as can be cultivated at acceptable levels of investment is already in use; further the livestock population is high and most of the range lands are overstocked.

Feasibility studies have been made on proposals to develop the three billion cubic meters of annual surface water resources but no project has yet been implemented. Of a large number of potential diamond deposits (Kimberlite pipes), one in the north is being put into production and planning is active for a second mine. Coal may be available in commercial quantities but explorations have only recently been initiated.

One other natural asset is as yet largely unexploited: the exceptional scenic qualities of the Lesotho mountains. At the present time, most of these areas are not readily accessible by road and consequently, few tourists or even local people reach and enjoy the most scenic sections of the country.

c. Human Resources and Employment:

Lesotho is a homogeneous nation with little internal friction and with a single native language, Sesotho.

Lesotho's population was estimated at 1,216,000 in the 1976 census. This is an increase of almost 250,000 over the previous total reported. Females outnumber males, 52 to 48 percent (619,500 to 587,300) in the 1966 census. The annual population growth rate during the decade was 2.27 percent. An important segment of the population is at all times temporarily absent from the country which reduces the de jure or total residents to a lower or de facto figure representing those physically present. At present approximately 200,000 Basotho are temporarily absent, almost all of whom are employed in the Republic of South Africa (RSA).

Over 90 percent of the population live in rural areas. Urban areas are growing in size but Maseru remains the only major center and its population is less than 50,000. With a basically static agricultural base, the pressure of population on land resources is severe and worsening. The agricultural census of 1970 found that 13 percent of the rural households were landless. Density varies greatly with the heaviest concentrations in the lowlands and much lighter dispersion at the higher altitudes. Over the entire country the de jure population density was 40 per sq. km. in 1975; the same figure when related to arable land was more than 300 per square kilometers.

The most significant feature of the employment situation in Lesotho is the large number of Basotho (approximately 200,000) working in South Africa. It is estimated that 50 to 60 percent of the male labor force and 10 percent of the female are so employed. This work is necessarily of a temporary and migratory nature; men are working mostly in mines and/or farms while women are generally work on domestic-type jobs.

There is increasingly the possibility that shifts in policy, either in RSA or in Lesotho, could curtail employment opportunities for Basotho in South Africa.

Total non-agricultural employment in Lesotho is less than 25,000 persons. The need to create more non-agricultural jobs in-country is one of the most pressing pre-occupations of the Government. However, with such a high proportion of the able-bodied workers temporarily absent, there is actually a shortage of qualified workers for some projects in Lesotho; the comment is often made that the farms are left for the old men, women and children to operate (over 75% of all men from ages 20-40 work in

South Africa). The fact remains, however, that the migrant Basotho workers are not only benefiting personally from a financial standpoint, they are also contributing very substantially to the economic well-being of Lesotho. For a number of years, their total earnings have grossed more than the total Gross Domestic Product (GDP) of the nation, and have accounted for more than half of the Gross National Product (GNP).

d. Agriculture:

Lesotho is basically an agricultural country. The agriculture sector contributes almost half of the total GDP; furthermore over 90 percent of the population lives in rural households. Agriculture is characterized by an essentially static physical plant operated by some 21,000 households consisting of about 368,000 hectares (ha) of cropland (12 percent of total land) plus the grazing areas (approximately 75 percent of all land) throughout the Kingdom. Farm units are small. Cropland averages about 2 ha. in 2 fields per unit for the 185,000 households having land in 1970. Major crops are maize, wheat, sorghum, beans and peas. At least 95 percent of the rural households grow cereals for subsistence; pulses (peas and beans) in particular are more of a cash crop. Livestock holdings are much less broadly dispersed than the croplands with 49 percent of the rural households reporting no livestock in the 1970 census. Over half of the holdings in the 109,000 households reporting livestock in 1970 amounted to less than 5 large animals (cattle, horses, etc) or 25 small animals (sheep, goats, etc); 80 percent have fewer than 10 large animals or 50 small livestock.

On-farm income is low; in 1976 it was estimated that 75 percent of the rural households were below the poverty datum line of R96.00 per month for an average family (six persons). 1/ In a study of the Thaba Tseka Project in the central mountains, average distribution of income per household in 1975/76 was listed as:

Crops	R 47
Livestock	90
Lesotho Off-farm	92
Migratory Labor	554
	R783

Income in the rural areas is remarkably even in its distribution; one source claims that even on a country-wide basis the lowest 20 percent receive 16 percent of the income while the highest 20 percent get 30 percent. 2/ Other sources show greater disparity. This relative equality of income is largely the result of an even distribution of land holdings and the effect of remittances from workers outside the country. Some observers

1/ A.L.A. van der Wiel, Migratory Wage Labour, 1977.

2/ Second Five Year Development Plan.

believe that the poorer households in terms of land and livestock trend to compensate for this factor through larger earnings off the farm.

Land resources and the Lesotho tenure system are clearly major problems in any effort to further rural development. Not only are substantially all lands suitable for farming already in cultivation, but they are also badly eroded in many cases and crop yields have been gradually falling although very high production levels are estimated by the Government for 1976/77. In fact, Lesotho has been importing constantly increasing amounts of food for a number of years. 1/

Production of the 5 major crops: maize, sorghum, wheat, beans and peas was 189,000 MT according to the 1970 agricultural census. The Bureau of Statistics has reported only 133,000 MT for the same crops in 1975/76. However, a preliminary estimate for 1976/77 indicates a doubling of output a 285,000 MT. The apparent reduction from 1970 to 1975 was primarily the result of a decrease both in yield and in the area harvested. A target of 316,000 MT for 1979/80 was set by GOL in the Second Five Year Development Plan.

The situation with respect to grazing is no better; the available grasslands and other forage are mostly overgrazed and herds are being increased, especially through imports of livestock from the RSA. In 1970 the livestock holdings in Lesotho included 2,629,000 sheep and goats, 552,000 cattle and 204,000 horses, donkeys and mules. A preliminary count is available for 1976 and indicates that livestock numbers may have decreased since 1970. Very recently, the decline may have been reversed; this is indicated in part by the relatively high levels of livestock imports since 1975.

In recognition of the need for improved practices on croplands and better management of the livestock and range resources the Lesotho Government has already initiated, completed, or will soon undertake a number of special development projects to develop the country's agriculture. Among the more important projects are:

1/ According to one estimate, if a gradient of 9% or more is considered the maximum slope for cropland, then over 60% of Lesotho's cultivated land is not truly arable.

Name of Project	Purpose	Location
Thaba Bosiu (completed in 1977)	To control erosion and increase crop production.	121,000 ha. in lowlands and foothills east of Maseru.
Senqu (to be incorporated into BASP)	To identify constraints to development and plan correctional action. First phase completed.	Lowlands, foothills and adjacent mountains in Mohale's Hoek and Quthing Districts.
Khomokhoana (to be incorporated into BASP)	Intensification of crop and livestock production.	19,00 ha. in catchment of Khomokhoana River in Northern Lesotho.
Concentration Area Projects	Integrated, area approach to Agriculture Development.	Lowland; Butha-Buthe, Berea, Mafeteng.
Basic Agriculture Services Project (BASP)	To induce a gradual, incremental improvement of practices and yields through applying the findings of the above projects and the AID-supported Farming Systems Research project.	36 development units throughout the country.
Mphaki Mountain	To improve levels of livestock and crop production in mountains.	72,000 ha. in Quthing District

Name of Government Corporation	Purpose	Location
Produce Marketing Corporation (PMC)	To improve crop returns and marketing practices.	Maseru and Branch Stations.
Livestock Marketing Corporation (LMC)	To improve livestock returns and marketing practices.	Maseru and Branch Stations.

e. Tourism:

Exceptional mountain scenery and a temperate climate are natural tourist attractions in Lesotho; in certain locations there is sufficient snowfall for winter sports. The Basotho culture and history are of interest to many visitors and the country is safe for travel though the current road system leaves much to be desired. Immediately prior to 1970 only some 4,000 visitors per year came to Lesotho; the RSA was and remains by far the major source of such visitors. After late 1970, however, the tourist traffic increased dramatically; it was then that the Holiday Inn complex, including a casino, opened.

Since that time the Lesotho Hotels Group with seven other hotels (some dating from colonial times) or restaurants has been formed and a Hilton Hotel complex is under construction. The bulk of these facilities are centered in Maseru but efforts are being made to disperse the tourist trade. A national park has been opened along the eastern border and hotel accommodations are being improved in outlying areas. By 1975 it was estimated that there were 600 beds of first class or luxury standard in Maseru and 250 beds of all types in other locations throughout the country; visitors were about 75,000 in 1974. By 1980 it is hoped to increase the tourist flow to 150,000 and thereby create at least 500 new jobs for Basotho workers.

To promote the tourist industry, the Lesotho Tourist Corporation (LTC) has been formed as the agency directly responsible for developing and implementing policy on the national level. The LTC has a subsidiary, the Lesotho National Tourist Office (LNTO), that engages directly in marketing and publicity.

f. Commerce:

Indigenous industry and commerce have been slow to develop in Lesotho. It was reported in 1964 that about 90 percent of the local business was in the hands of the 72 members of the Basutoland Chamber of Commerce; only 4 members were Basotho. The situation has changed to some extent during the past decade but the basic constraints remain.

Investment capital is limited and transport is difficult. Competition for the market is keen and the Basotho do not have a strong background of entrepreneurial skills. Although the climate for development is not particularly hospitable, there is an obvious need to expand employment in-country so as to absorb some Basotho now in agriculture or in migrant labor jobs, as well as others added to the labor force through population growth.

Another reason for making strenuous effort to expand Lesotho commerce and industry is the possibility that employment opportunities outside the country arbitrarily could be made less attractive or restricted. To encourage investment and expand employment, the Lesotho National Development Corporation (LNDC) was set up in 1967. By 1973/74 some R20 million in investments had been attracted. Among the projects initiated were two industrial areas, 2 shopping centers and the Holiday Inn complex.

New production units are manufacturing clothing, lamps, candles, rugs and tapestry, sheepskin products, pottery, umbrellas and fertilizers. For a time in the mid-1970's a considerable number of TV receivers were assembled for export. Diamond polishing, tire recapping and grain milling are also included among the enterprises. Some 2,000 additional jobs may have been created. The LNDC remains active and hopes to contribute importantly to the national target of creating new employment opportunities for 7,000 persons in this sector by 1979/80.

Through the LNDC it is possible to set up long-term leases on industrial sites. However, many Basotho complain that not enough credit is extended to Basotho entrepreneurs. In 1975 the Basotho Enterprises Development Corporation (BEDCO) was set up as a subsidiary of LNDC. BEDCO's function is to promote small scale local enterprises through credit and technical assistance to selected business units throughout the country. To date most of the new business and industry has been concentrated in Maseru. Among the more promising areas for further business growth are the processing of agricultural products, production of building materials and furniture, construction of buildings, and expansion of tourist facilities and handicraft.

On the whole, the GOL has been aggressive and productive in stepping in to fill needs for commercial and related activities that it feels are needed. However little credit is being provided for small businessmen or farmers. Interest rates have been closely in line with those prevailing in RSA. There has been considerable disparity between interest on savings and charges on advances despite the ready availability of funds for loans. Government policy is to retain savings in-country to the maximum extent practicable so that these funds may be used to support the national development effort. It is commonly known that in the past there has been a very considerable outflow of capital, particularly for investment in RSA. Of late,the GOL has been operating an enforced savings scheme through which 60 percent of the proceeds (except the first and last months) of the initial contracts of migrant workers is withheld for deposit in the Lesotho Bank; the worker may then collect the savings plus interst upon completion of the contract.

g. Education:

From the beginning of the nation in the 1830's, Christian Missions were at work establishing schools and clinics throughout the country, originally at King Moshoeshoe's invitation. These missions brought modernizing ideas, along with new agricultural products such as potatoes, wheat and fruits. They conducted the schools and printed books in the Sesotho language. This coupled with Moshoeshoe's annexation-federation style of Government, led to the early linguistic and cultural unification of the nation. Consequently Lesotho has one of the highest literacy rates in Africa (53 percent) and is one of the few African nations with ethnic, linguistic and religious homogeneity; eighty-five percent of the population are Christians.

The weakness of communication links between the Ministry of Education (MOE) and the 1,100 primary schools scattered throughout the mountains of the country (many of them Mission-run schools) has made educational reform difficult. Many teachers are unqualified and curricula in the mission and government run schools are not yet standardized. The teacher-pupil ratio is currently 1:52. The number of secondary schools has increased by 50 percent since 1971 while enrollment has increased by 53 percent. There are now 61 secondary schools and 16,726 pupils, whereas

in 1971 there were 40 schools for 7,816. The average number of pupils per school has increased from 195 to 274 during the past few years. Thirty percent of the teachers are expatriates, especially in Math and Science. Twenty-eight percent of the teachers are unqualified.

The MOE has identified unqualified teachers as one cause for the deterioration of education standards in recent years. It has consolidated the 7 teacher-training institutes into 4, including the National Teachers Training College (NTTC) at Maseru. Enrollment for primary teachers' certificate increased by 171 in the first year that the new campus opened.

There are 835 pupils enrolled in the technical and vocational schools within the country, half of whom are studying home economics. The next popular course is construction methods (10 percent). The International Bank for Reconstruction and Development (IBRD) is collaborating in the selection of 6 secondary schools for the addition of vocational and technical curricula, including adult community training centers.

The National University of Lesotho (NUL) was established in 1975. It was formerly a Roman Catholic affiliated institution that operated as the University of Botswana, Lesotho and Swaziland. There were 600 students in the academic year 1976/77, including 501 Basotho students. Students include 253 women and 348 men.

h. Health:

The climate and terrain of Lesotho are inhospitable to the carriers of the typical African diseases such as the malaria-spreading mosquito, certain flies and the snails that are the essential part of the Bilharzia cycle. Human-borne diseases or conditions such as tuberculosis, gastro-intestinal disorders, leprosy, goiters, measles, venereal disease, plus lung conditions developed in the South African mines are much more prevalent. Many of these conditions are associated with malnutrition, poor hygience, and contamination of drinking water. Lesotho's Ministry of Health is hard-pressed to satisfy the demands for treatment of these endemic disorders, much less to mount preventive campaigns.

The health establishment consists of hospitals, clinics, outstations, and village health workers, plus some 822 medicine men and herbalists who practice traditional methods.

Lesotho has nine government general hospitals, one in each district-capital, a mental hospital (Mohlomi) and a leper hospital (Bots'abelo) on adjoiningsites near Maseru. Of the government hospitals, Queen Elizabeth II Hospital in Maseru is the largest, and the only establishment with specialist services. A new National Referral Hospital is under consideration.

The Ministry of Health (MOH) operates clinics throughout the country; missions and the Red Cross operate another 60. There are 19 outstations.

Primary health care at village level is MOH's target-institution for 1978, with emphasis on primary health care and delivery systems.

Historically, religious and other related agencies have provided major health services in Lesotho. In 1974, these agencies began to coordinate their activities with the MOH through the newly formed Private Health Association of Lesotho (PHAL). The importance of PHAL to the overall health service of the nation is indicated by the fact that its affiliates provide 43 percent of the total bed capacity, 71 percent of all health facilities and employ 30 percent of all doctors and 39 percent of all nurses in the country.

TABLE V-E-1

VITAL STATISTICS

Birth Rate (ap)	:	37 live births/1000 population
Infant Mortality Rate	:	106/1000 live births
Rate of Natural Increase	:	2.2 percent per annum
Expectation of Life at Birth	:	49.6 years for males 53.6 years for females
Early Childhood Mortality (1-4 years)	:	81 deaths/1000 males 70 deaths/1000 females
Under 5 Nutrition Status	:	
Stunted growth		22.7 percent
Anaemia		25.0 percent
Completed Fertility	:	5.6 births for a woman
Percent of Women of Childbearing Age: (15-50 years) 1976 Census		
Mountain	:	44.7
Orange River Valley	:	44.2
Foothills		43.9
Lowlands	:	45.5
Disability Rate	:	0.2 percent (due to mining accidents)

i. Relationships with South Africa:

Lesotho is completely surrounded by the Republic of South Africa, including more recently the Transkei, and is vitally affected by the neighboring areas and their policies. This dependence is specifically apparent in the fields of monetary affairs, communications, trade and employment.

Lesotho is a member of the Southern Africa Customs Union along with the RSA, Botswana and Swaziland. Through this arrangement there is substantially free trade among the four member countries with a minimum of restrictions. A revenue pool made up of customs, excise and sales taxes collected in the areas is shared; the pool is administered by RSA and the proceeds make up an important part of Lesotho's revenues. During the period of the Second Five-Year Development Plan, it is estimated that these taxes will constitute approximately R112,000, or 65 percent of all revenues.

Through the customs union, Lesotho has free access to a substantial market for its agricultural and industrial goods. In the past this allowed Lesotho to take advantage of subsidized prices on certain agricultural products in RSA. Some contend, however, that the three less-developed partners in this arrangement may be at some disadvantage because their wage and price structure and trade policies must be geared closely to those prevailing in RSA. Also, often new enterprises in the less-developed countries find it difficult to compete effectively with the more established producers of RSA.

Establishment of the Transkei has led to concern in Lesotho that the freedom of movement of goods and even persons within the customs union areas may be curtailed. How serious this threat may become is not entirely apparent but it is one justification for the South Perimeter road project which will decrease dependence of the southern and south-western regions of the country on goods which must transit Transkei.

The South African Rand is the currency used in Lesotho, South Africa and in effect, Swaziland. Under the currency agreement, free movement of funds is guaranteed within the Rand monetary area. This relieves Lesotho of many balance of payment problems but at the same time, it opens the way for liquid funds to move out of the country. Lesotho received a little over R1.0 million in 1976/77 from the RSA in payment for its participation in the Rands Monetary Agreement.

j. National Income and Government Finances:

Between 1967/68 and 1973/74 the Gross Domestic Product (GDP) of Lesotho almost doubled to R84.1 million; during the same period the Gross National Product(GNP) reached R113.8 million. Per capita income based on GNP was about R100 in 1973/74; this same figure was estimated at R61.5 (unadjusted) in 1967/68. Both the GDP and the GNP grew rapidly after

1971/72, the latter being influenced especially by higher wages for migrant workers and increased remittances from Basotho workers in the Republic of South Africa.

TABLE V-E-2

NATIONAL INCOME AT MARKET PRICES (R1,000)

	1967/68	1969/70	1971/72	1973/74
GDP at Market Prices	42,331	47,121	54,683	84,136
Factor Income from Abroad 1/	10,640	12,498	15,545	29,683
Gross National Product	52,971	59,619	70,228	113,819

1/ Almost wholly migrant remittances

Source: Bureau of Statistics

Wage rates in the RSA mines increased from R0.42 per shift in 1971/72 to R2.50 in 1975/76; in 1974/75 the total earnings of Basotho in South Africa (only a portion of which are remitted) were more than the entire GDP of Lesotho.

Imports and private consumption were also among the factors showing marked increases. Table V-E-3 is a breakdown of the GDP by sectors. Agriculture is by far the leading single contributor to the GDP; other important sectors are community and social services, ownership of dwellings and commerce. This distribution shows clearly the low level of development of industry, construction and finance.

It seems probable that the growth target of 5 percent per annum for GDP was achieved in the first plan period ending in 1974/75. During the 1969/74 period paid employment in Lesotho may have increased by 6,000. By the end of the Second Plan in 1980, a further increase of 46 percent in total output is targeted. Whether this goal is reached depends importantly on the performance of agriculture.

TABLE V-E-3

DISTRIBUTION OF GROSS DOMESTIC PRODUCT BY SECTOR 1969/70 THROUGH 1971/72

Sector	Average
Agriculture	41.9
Mining, Quarrying	1.5
Manufacturing, Crafts	2.6
Electricity	0.3
Building and Construction	2.6
Commerce, Catering	14.0
Transport, Telecommunications	1.6
Banking, etc.	1.5
Ownership of Dwellings	14.8
Community, Social Services	16.2
Other Goods, Services	3.0
	100.0

Source: Second Five Year Development Plan

Table V-E-4

CAPITAL INVESTMENT PROGRAM* 1975/76 - 1979/80
(in thousands of Rand)

Original Second Plan (1975 prices)

SECTOR	1975/76	1976/77	1977/78	1978/79	1979/80	TOTAL
Agriculture	4,161	7,139	10,317	7,603	7,191	36,411
Industry, Commerce and Tourism	2,450	5,150	4,835	3,380	3,685	19,500
Water and Mineral Resources	612	207	176	65	60	1,120
Economic Infrastructures	2,178	4,409	3,470	5,190	4,897	20,144
Education and Training	2,533	2,838	2,293	2,114	2,125	11,903
Social Infrastructure	1,372	3,487	3,414	2,678	2,661	13,562
Government Services	2,126	2,168	1,775	1,496	1,352	8,917
TOTAL	15,432	25,398	26,280	22,526	21,921	111,557[a]

a. Of this R111,557,000, an implementation rate of 72% or R80,000,000 was estimated.

Table V-E-4 Cont'd.
CAPITAL INVESTMENT PROGRAM

Revised Second Plan (Current Prices)

SECTOR	1975/76	1976/77	1977/78	1978/79	1979/80	TOTAL
Agriculture	3,217	4,378	14,170	15,893	16,221	53,879
Industry, Commerce and Tourism	5,275	4,438	9,324	8,700	8,104	35,849
Water and Mineral Resources	419	876	1,404	1,750	782	5,231
Economic Infrastructure	2,827	3,652	17,341	26,968	26,955	77,723
Education and Training	1,600	3,936	5,851	7,898	8,134	27,411
Social Infrastructure	1,476	2,928	10,013	14,042	16,329	44,788
Government Services	1,593	2,859	2,111	4,940	4,095	15,598
TOTAL	16,407	23,047	60,214	80,191	80,620	260,479[b]

b. Of this R260,479,000, an implementation rate of 60% or R156,287,400 was estimated.

* This table is a compilation of the Capital Expenditure Tables found in the individual sector papers, minus the capital inputs of food programs and private investment.

Source: Donor Conference Papers, September 1977

In 1977/78 the recurrent expenditures of the Government of Lesotho (GOL), have been established at R44.3 million, which is a substantial increase over the R26.8 and R27.4 million in the budgets for 1975/77 (Tables III-D-3 and II-D-4). GOL revenues available for the government's capital investment program for these three years has ranged from R4.7 to R5.7 million. Most of the increase in revenue is projected to come from customs and excise taxes which have been the source of half to two thirds of the recurrent revenue in recent years.

It is in the capital account that the current dependence of the GOL on grants and loans is distinctly evident. The sources of this concessional financing are numerous (21 donors are listed by government). See Table V-E-4 for a summary of the capital investment program of the Second Five-Year Plan and Table V-E-5 for detailed capital account expenditure.

Education, Agriculture and Works (Ministries) received significant proportions (19.9%, 10.3% and 7.6%) in the 1977/78 GOL recurrent budget.

TABLE V-E-5

CAPITAL ACCOUNT EXPENDITURES 1974/5 - 1976/7
(in Thousands of Rand at Current Prices)

HEAD	1974/75	1975/76	1976/77
Agriculture	2,614	2,758	2,400
Health	13	113	142
Education	330	2,130	2,350
Finance	128	2,038	3,400
Commerce and Industry	60	969	1,137
Justice	8	40	88
Interior	28	7	989
Cabinet	305	533	904
Minister to the Prime Minister	43	600	212
Police	-	210	209
Foreign	254	-	-
Communications	294	527	652
His Majesty	-	835	1,355
Works	2,524	1,971	3,240
TOTAL:	6,601	12,731	17,078

Source: Donor Conference Papers, September 1977

k. External Trade:

While exports have more than doubled since 1972 to a 1976 total of R14.0 million, Lesotho's imports have increased even more rapidly and by 1976 they exceeded exports by R165 million. From Table V-E-6 it is apparent that agricultural products have been by far the major source of export income; wool, mohair and livestock being the principal items. Of late, however, miscellaneous items such as TV receivers (assembled in Lesotho) have been gaining as income earners and in 1976 this category made up over half of the total. 1/ Pulses, especially haricot beans, have made a good showing among the exports.

Livestock products have been decreasing as a portion of total exports and recorded wheat exports have become nil. It is alleged that because of serious deficiencies in the marketing system, a very considerable part of the wool and mohair trade has recently moved through channels where it is not reported or recorded—presumably smuggled. A number of observers have come to the same conclusion in regard to livestock moving across the border to RSA. This trade must exist because it would otherwise be difficult to explain the falling off of recorded exports of these products. As a matter of policy, the GOL has been discouraging exports of wheat with the aim of building its own domestic milling facilities.

TABLE V-E-6

EXPORTS, KINGDOM OF LESOTHO, 1972 - 1976

Commodities	1972	1973	1974	1975	1976*
			(R1,000)		
Cattle	686	1,561	1,246	300	192
Other Live Animals	258	437	280	74	57
Wheat	140	144	6	4	-
Beans and Peas	503	193	55	1,059	1,789
Wool	2,040	3,191	3,452	1,512	1,719
Mohair	1,122	1,526	1,589	2,291	1,989
Hides and Skins	48	147	14	-	64
Diamonds	196	255	902	483	455
Other	1,053	1,316	2,265	3,517	8,380
Total:	6,093	8,770	9,889	9,240	14,645

* Preliminary—Source: Bureau of Statistics

1/ The assembling of TV receivers, which were a major export in 1976, has reportedly declined drastically as the RSA market has become saturated.

Foodstuffs and livestock, along with the broad category of manufactured goods, make up the bulk of the imports which by 1976 had reached almost R180 million per year (Table V-E-7). It is particularly significant that Lesotho should find it necessary to import such large quantities of cereal products. This reflects the failure of the country's agriculture to meet the basic food requirements of the growing population.

The rapidly growing imports of livestock are believed to be one reflection of the higher wages being received by Basotho working in RSA; they are investing especially in cattle which are held in high esteem under the local social structure. The influx of wages earned by the migrants also creates an active market for other imports; this is indicated by the steadily increasing receipts of all types of consumer goods including vehicles. With a ratio of imports to exports exceeding 10 to 1, Lesotho would have a very difficult fiscal problem if outside income were to be curtailed suddenly.

TABLE V-E-7

IMPORTS, KINGDOM OF LESOTHO 1972 - 1976

Commodities	1972	1973	1974	1975	1976 *
			(R1,000)		
Foodstuffs and Livestock	10,071	16,014	16,198	21,874	37,945
Beverages and Tobacco	1,616	2,186	3,293	5,183	7,863
Crude Materials	529	404	455	790	1,295
Mineral Fuels and Lubricants	2,440	2,836	5,217	7,131	11,742
Oils and Fats	381	465	815	1,003	1,561
Chemicals	2,172	2,776	3,903	6,334	9,525
Manufactured Goods	25,763	35,798	49,230	74,846	109,682
Other	-	-	9	22	12
Total	42,972	60,479	79,120	117,273	179,625

* Preliminary

Source: Bureau of Statistics

2. Description of the Project Area and Zone of Influence

a. Method of Delineation of Zone Influence:

The zone of influence of a road is the maximum area within which the presence of the road can be predicted to directly or indirectly cause economic and social change. The zone is a sort of human catchment area except that the human benefits flow in both directions from the main stream or road, as opposed to the one-way flow in a water catchment area. Upon completion of the planned network of feeder roads from the Southern Perimeter Road people in the farthest reaches of the area will have a greatly reduced physical limitation on their ability to move themselves and their products to any part of the transport net.

The delineation of the zone of influence is determined by the location of the road with respect to the surrounding terrain and the distribution of population and other transport and infrastructural facilities. It is also determined by the way information about the general area is packaged. For example, much of the data in Lesotho on agricultural production, vehicle registration, livestock population, exports and imports and fiscal data is reported in terms of entire political districts, in this case Quthing and Qacha's Nek. Population, on the other hand, is reported by village. Unfortunately some of the villages cannot be found on existing maps, so that the smallest unit of population for area analytical purposes is the "enumeration area" consisting of from 4 to 23 villages and ranging in size from ten square kilometers to 100 square kilometers. Some agricultural information was also collected and reported using the population census enumeration areas.

Some livestock information, including range descriptions, has been reported in terms of "dip tank" areas. The tanks are placed so that few livestock should have to go more than 10 to 15 miles for treatment.

Other information can be spotted relatively precisely on maps: administrative centers, schools, wool and mohair sheds, livestock centers, trading stores, and archeological and paleontological sites.

The Basic Zone: Because of the large amount of information cited only in terms of districts, the two districts of Quthing and Qacha's Nek have been established as the basic zone of influence. The Lesotho national boundaries form the entire southern and southeastern limits of the zone. The northern boundaries to the districts are formed for the most part by the natural watershed divides of the Senqu (Orange) River or its tributaries and are appropriate limits for the zone. In both area and population, the zone comprises approximately 14 percent of the Lesotho totals. See Table V-E-8.

TABLE V-E-8

POPULATION AND AREA-ZONE OF INFLUENCE

	Quthing	Qacha's Nek	Zone Total	Lesotho Total
Population 1976	83,491	76,497	164,988	1,216,800
Percent of Lesotho Total	7.3	6.3	13.6	
Area, Km^2	74.6	62.1	136.7	951.2
Percent of Lesotho Total	7.8	6.5	14.3	
Arable Land, Km^2	211	181	392	3,862
Percent of Lesotho Total	5.4	4.7	10.1	

Lesotho has also been divided into five topographical regions for analytical purposes. Statistical data is grouped by these regions as well as by the administrative districts. One of the regions, the Senqu River Valley lies almost within the zone. Virtually all of the remainder of the zone comprises part of the mountain region, which includes most of the eastern and southeastern two-thirds of the country. By subtracting data relating to the Senqu River Valley from the district totals a slight refinement of district data is possible.

Competing Zones: Delineation of the zone is complicated by the fact that the Southern Perimeter road is not the only new or improved road that can affect the two-district zone. A direct link from Maseru to Qacha's Nek would be made if the Maseru-Roma-Semonkong-road is improved and extended to the Southern Perimeter road at Sekake's, 42 kilometers west of Qacha's Nek. This proposed road would be 185 kilometers long, probably constructed to gravel 3 standards (one lane). A second road would extend from Maseru to Thaba Tseka and Sehonghong and will meet the Southern Perimeter road at Mpiti. The distance between Maseru and Qacha's Nek on this road will be 349 kilometers. This road is presently being upgraded to Thaba Tseka by the IBRD. CIDA is considering upgrading the existing track from Thaba Tseka to Mpiti to gravel 3 standards. Both of those roads conceivably could compete with the Southern Perimeter road for Maseru traffic from the eastern part to the zone.

The Maseru-Sekake's distance by the short (Roma-Semonkong) route is 185 kilometers. Since the road will probably be single-lane gravel 3, mainly through mountains, it should take a little over six hours to make

the trip.1/ The distance from Sekake's to Maseru via the Southern Perimeter road will be 284 kilometers and will be at least two-lane gravel 1. The driving time would be approximately five hours (see Table III-A-2 which includes design speed standards). 2/ Use of the short road will also demand more vehicle maintenance and repair. For example, tires are said to last less than a year on the gravel roads. It seems unlikely that the short route will attract the vehicular traffic between Maseru and eastern Quthing and Qacha's Nek districts.

There is an important bonus for the Southern Perimeter road is having the shorter route established. Cattle from the livestock-rich Quthing and Qacha's Nek districts that are to be trekked to the central abattoir at Maseru will almost certainly be driven along the short route. Time will not be important but the short distance and better opportunities for grazing will be. This will spare the Southern Perimeter road some of the destructive wear and tear that herds of cattle can inflect upon a road.

The distance from Qacha's Nek to Maseru via Thaba Tsaka would be 349 kilometers, or approximately 13.5 hours driving time over predominantly grade 3 mountain roads. From Qacha's Nek to Maseru via the Southern Perimeter road is 335 kilometers or approximately six hours driving time. At about 57 percent of the way from Qacha's Nek to Thaba Tseka the driving time to Maseru would be about ten hours either way. Again, cattle would tend to use the Thaba Tseka route while vehicles operators would prefer the 335 kilometers of gravel 1 (at least) road that lies after Qacha's Nek.

The network of roads feeding into the existing Southern Perimeter road is sparse and is generally limited to use by four-wheel-drive vehicles, horses and foot travellers. The part of this zone most accessible to the present road and which should realize the most immediate benefits from the improved road consists of (a) the entire area between the Senqu River and the Southern border of Lesotho extending from Quthing to Qacha's Nek, (b) part of the area on both sides of the road between Mohale's Hoek and Quthing, and (c) the valley of the Senqu River extending NNE from Mpiti-Qacha's Nek to approximately Sehonghong. A U.N. mission team which visited Lesotho in March, 1978 to review the effects of the Transkei border closures has recommended a major feeder road

1/ Maseru to Roma, 30 km @ 80 km/hr = .375 hours; Roma through hilly country on gravel 3 to edge of mountains, 30 km @ 48 km/hr = .625 hours; 125 km through mountains on gravel 3 @ 24 km/hr = 5.20 hours for total 6.2 hours or 6 hours, 12 minutes. Road characteristics defined by Director of Roads, Ministry of Works.

2/ 128 km @ 80 km/hr = 1.6 hours; 48 km @ 65 km/hr = .74; 116 km @ 48 km/hr = 2.42 for total 4.75 hours or 4 hours, 45 minutes.

expansion and upgrading project which, when completed, will further increase the effective zone of influence of the Southern Perimeter road

b. Zone Population:

The total population in the zone of influence as of 1976 was 164,989 persons, of whom 79,099 were male and 85,889 were female. See Table V-E-9.

Average population density for the zone is 247 persons per km^2. Quthing has 297 and Qacha's Nek on 192 persons per km^2. Density per hectare of arable is very high: 4.2 persons per ha for both Quthing and Qacha's Nek Districts. Actual density is probably a little lower because much marginal or sub-marginal land is being worked for crops. Average farm holdings in Quthing in 1970 were 1.7 hectare in Quthing, and 1.8 hectare in Qacha's Nek.

According to the 1976 population census, 17,617 men and 2,958 women were absent—presumably out of the country, at the census time. If 90 percent of the men worked in the mines in the RSA and brought back the equivalent of an average R.450 per year per miner, a total of R7.14 million ($8.21 million) would have accrued to the zone of influence. These sums would provide a good base for investment in small businesses or service activities, assuming that the presence of the road will be attractive enough to break traditional spending patterns. Reports that some persons are buying vehicles or saving in order to buy vehicles suggests that traditional spending might change.

TABLE V-E-9

POPULATION - 1976

	Quthing	Qacha's Nek	Zone	Lesotho Total (Rounded)
Population Present - Male	32,916	18,574	51,490	458,200
- Female	45,223	37,700	82,923	596,000
Total Present	78,139	56,274	134,413	1054,200
Population Absent - Male	9,204	8,413	17,617	129,100
- Female	1,148	1,810	2,958	23,500
Total Absent	10,352	10,223	20,575	152,600
Population Total - Male	42,120	36,979	79,099	587,300
Percent of Lesotho Total	7.2	6.3	13.5	
Total - Female	46,371	39,518	85,889	619,500
Percent of Lesotho Total	7.5	6.4	13.9	
Total Population	88,491	76,498	164,989	1216,800
Percent of Lesotho Total	7.3	6.3	13.6	

Population is growing at a 2.2 percent rate. Finding employment for these persons is a pressing concern of the Government. All arable land has been divided among the growing number of applicants until the average size of farm is less than two hectares. To this must be added the share of communal grazing lands to which the farmer is entitled. The trend toward smaller farms seems irreversible. A decline in earnings from farm production will also occur unless productivity is increased through increased use of agricultural inputs, increased extension services and improved marketing channels.

TABLE V-E-10

LAND USE

	Quthing	Qacha's Nek	Zone Total	Lesotho Total
Area Km^2	2,980	3,960	6,940	30,550
Percent of Total	9.8	13.0	22.8	
Arable Land Km^2	211	181	392	3,862
Percent of Total	5.5	4.7	10.2	
Grazing Land 1/Km^2	2,255	2,885	5,120	22,900
Percent of Total	9.8	12.6	22.4	

1/ Rough approximations, based on data received from Livestock Division and from Senqu Project.

c. Land:

After the population, land is the most valuable resource. However, because of erosion and poor agricultural and range management practices, land must be considered a wasting resource. The zone contains 22.8 percent of all Lesotho land, 10.2 percent of arable land, and 22.4 percent of grazing land. See Table V-E-10. An aggressive land conservation program is making headway within the limits of its personnel and financial capability. However, attempts to introduce needed changes in agricultural, livestock raising and range management practices have so far made little impact although research has now clearly identified key problems and Government extension and research personnel are devising alleviatory measures. The Senqu River project is working partially within the zone—concentrating on Mohale's Hoek and Quthing Districts.

The total 512,000 hectares of grazing land should support 127,500 large stock units (LSU). One LSU equals one head of cattle at 350 kg. average weight or five sheep or goats. With a zone animal population of 74,500 cattle and 434,900 sheep and goats, the LSU equivalent is 161.480

units. At the natural grazing rate of four hectares to one LSU, the total grazing requirement for the existing animal population is 0.646 million hectares, as opposed to the 0.512 million hectares that are available. Although the actual ratio of hectares per LSU is clearly inadequate, the farmer has been fortunate in that the recent years have been wet: a dry year could be calamitous.

d. Water:

Surface water in Lesotho is drained by only three river systems. The lowlands are drained by the Caledon River, the foothills and a small part of the mountain area is drained by the Makhaleng River, and virtually all of the mountain area is in the Senqu River catchment area. Most of the potential irrigation projects are in the lowland region, but four are on the Senqu River below Mr. Moorosi.

The only four hydro-power schemes considered worthy of consideration in the next five years are on the Senqu River. The most promising is in the north-central mountains. Two are in the zone of influence: Mohlakaneng near Quthing (18 to 32 MW), and Tsoelike near Qacha's Nek (24 MW). A small project in the Quthing River near Ongeluk's Nek cannot yet be supported on the basis of admittedly poor hydrographic data.

There are water supply systems in the two district capitals. The systems at Quthing and Qacha's Nek supply amounts of water adequate to present needs. In village supply systems one or more open taps are usually sited throughout the villages for maximum convenience.

The Quthing District with 766 villages, has 25 systems, while Qacha's Nek has 33 systems for its 428 villages. One hot water spring is said to have been recently located near Qacha's Nek. This would be one of four in Lesotho. It may have a touristic potential.

e. Minerals:

The geology of the area has not been adequately studied. The geology of a section of the western lowlands lying in Mohale's Hoek district is said to resemble that of the Colorado Plateau in the USA and may, therefore, have uranium. Test drilling for coal was recently started near Mohale's Hoek. The first drilling, to 6,000 feet, found only a narrow vein, although the structure is the continuation of a coal deposit in the RSA that is being commercially mined. An analysis of remote sensing imagery has revealed some 30 kimberlite pipes, the structures in which diamonds are found. Two of these pipes are located near Qacha's Nek town. No further work has been done to establish their suitability for further development.

f. Commerce and Public Services:

Traders: Commerce in the region outside the two major towns has for many years been dominated by the operators of trading or general stores.

In earlier days, it was the traders who constructed trails and roads to their stores to facilitate their own transport and to encourage patronage of their stores. Even now their vehicles may be the major means for transport in some areas both for passengers and for freight. In some instances, they maintain the ferries at important river crossings. As of 1974, traders and religious missions maintained over 530 km of tracks and trails in Lesotho.

The traders purchase or barter for local produce and are a convenient outlet for wool, mohair, wheat and other suplus products. Although they sometimes compete with itinerant traders from South Africa, they usually control the local markets. In recent years, the expatriate trader is being replaced slowly by Basotho, although their lack of managerial expertise has made this a hazardous occupation.

Local disposable income has increased markedly during the last two years, primarily as result of higher wages in the South African mines. The range of products on sale at the stores has broadened and now includes a wide variety of clothing as well as furniture. The Basotho are not reluctant spenders. However, a large proportion of the mine wages still is spent on cattle since no other commodity or entrepreneurial investment can compete with the local prestige that accompanies the possession of cattle.

The number of stores has increased during the past four years, with Sekake's gradually emerging as a major centre joining Quthing, Qacha's Nek, and Mount Moorosi.

Quthing and Qacha's Nek have banking services provided by at least two of the country's three commercial banks. Although local demand and time deposits are not insignificant, the loans to local businessmen and farmers are. One bank with R3.5 million on deposit has less than R0.5 million out on local loans. Few farmers use the bank either for loans or deposits. Their inability to provide mortgageable security precludes most of them from loans.

Local Services: The towns of Quthing and Qacha's Nek both have at least three cafes, a hotel, a liquor store, a hospital, an animal auction salesyard (near but not in Qacha's Nek), and at least five general stores. These stores, as in the villages, usually let local vendors sell their wares on their verandas. In the villages, they carry stamps and will handle mail on an informal basis.

Busses serve Quthing from Maseru and run between the two district capitals. At least two bus enterprises have been abandoned in the Mount Moorosi, Mphake, Sekake's, Qacha's Nek sectors recently because of excessive maintenance and repair costs. The local leaders say the potential for truck, bus and taxi operations in these sectors will be high if the road is improved.

Two service stations for gasoline (petrol) and diesel fuel are located in Mount Moorosi, and one each in Braakfontein, Holy Cross, Quthing and Qacha's Nek. Wholesale fuel costs in Qacha's Nek are lower than in the other towns because they are based on ex-Durban refinery prices. These stations sell 7 liters of diesel fuel for each 5 liters of petrol. None of the service stations in these towns have vehicle repair capability.

The local entrepreneur who wants to get into the bus or trucking business faces certain difficulties, some of which the better road will alleviate. He may find it difficult to get credit for the purchase in Lesotho, in which case he will go to a "trust bank" in South Africa. He will pay interest at the rate of 13 percent on the amount owed. He will pay R21,000 for a Leyland 10-ton truck (R15,000 for a Nissan or Toyota) and will have to buy an additional 20 percent worth of spare parts and tires because they are not now available in Quthing or Qacha's Nek. He must be capable of making his own repairs if he is located east of Mount Moorosi. The interest that he pays on the extra 20 percent for spares will be a direct savings if the improved road relieves him of the necessity of holding his own supply of spare parts.

Trucks are operated by private owners. There are relatively few in eastern Quthing and Qacha's Nek, where their services are at a premium. Rates vary depending upon the bargaining abilities of the trucker and his client.

Public services available to the population include electricity to villages near the road from Quthing to Qacha's Nek. A 33-Kv transmission line brings power from Maseru to Mohale's Hoek, where an 11-Kv line continues to Quthing. An extension from Quthing to Mt. Moorosi is under construction.

The national telephone net extends to Mount Moorosi. A separate segment connects Sekake's to Qacha's Nek. Communication between Qacha's Nek and Maseru is by radio. A police radio net connects all stations in the zone and permits communication with Maseru. Police stations are located at the three district capitals and at Sekake's, Mount Moorosi and Mpaki.

There are Government-run general hospitals in Quthing and Qacha's Nek and 7 Government rural clinics in the project area. In addition there is one mission hospital and 7 million clinics. There is one doctor for every 60,000 people in the zone of influence compared to 1:30,00 for Lesotho as a whole.

219 primary schools and 7 secondary schools are found in the project area. Table V-E-11 indicates that only 27.6% of students complete primary school in Quthing and Qacha's Nek respectively. Only about 25% of primary graduates enter secondary school and only about 50% of entrants complete secondary school. Fewer still continue on to high school.

TABLE V-E-11

ENROLLMENT BY STANDARD/FORM BY DISTRICT, 1976-77

	Primary School							Secondary School			High School	
District	Standard							Form			Form	
	1	2	3	4	5	6	7	A	B	C	D	E
Quthing	3618	3007	1655	1932	1565	1108	1000	250	154	145	36	32
Qacha's Nek	3548	2410	2170	1649	1433	996	765	196	144	105	42	24

Table V-E-12 shows that education in the project area conforms to the general pattern in Lesotho. Not only do fewer boys start school than girls, but of those who start, fewer boys than girls complete primary school. In addition, the average age of boys is higher. This is a demonstration of the social norms in which boys are expected to work at an early age, mainly as herd boys, while the cost of the education of a girl may be recouped in her bride price.

TABLE V-E-12

Enrollment in Primary Schools by Standard and Sex - 1976

	Grade/Standard														ALL STANDARDS		
	1		2		3		4		5		6		7				
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Total
Quthing	1553	2065	1141	1866	975	1680	678	1254	466	1059	370	738	390	610	5575	9272	14845
Qacha's Nek	1627	1921	1021	1390	810	1360	596	1053	472	961	339	657	268	497	5133	7839	12972
Lesotho	23792	26502	18428	22909	15556	22589	11831	18609	8616	15873	6882	12645	6063	11721	91168	138849	22281
Total-1975	23763	26453	18919	25089	15403	21411	11076	18130	8809	15163	6674	12450	6272	12321	90915	131817	221932

g. Major Road-Related SEctors: (Agriculture and Tourism)

Agriculture: The two districts of Quthing and Qacha's Nek are most directly affected by the proposed improvement project. Parts of these districts, particularly the corridor adjacent to the road, will benefit more quickly than the areas that are more remote but there will still be a measurable impact on all parts of the districts. These districts may be classified as "agricultural" because the urban segment is minimal. In this analysis of the region's agriculture, data for the two districts will be considered representative of the area served by the road.

Crops: Cropland in the region is almost 39,200 hectares, or 11 percent of the total for Lesotho. Population in 1976 was 164,989 which gives a density of 420 per sq. km. of arable land (Table V-E-13). In the entire country, the density is 330 per sq. km. Table V-E-14 indicates the 1970 cropping pattern in the country and in the region; the only major differences are that wheat and beans were less important in the region while sorghum was relatively more important in the region.

TABLE V-E-13

POPULATION AND LAND AREA, LESOTHO, 1976

	Population	Area	Crop Land	Population Per Km^2 Cropland
	(1,000)	(km^2)	(km^2)	(Number)
Lesotho	1,216.8	30,350	3,682	330
Quthing	88.5	2,980	211	419
Qacha's Nek	76.5	3,960	181	423
Total Zone	165.0	6,940	392	842

Source: Government estimates and 1970 Census of Agriculture

TABLE V-E-14

CROPPING PATTERN, LESOTHO, 1970

Crop	Lesotho	Quthing	Qacha's Nek	Zone Total
Maize	129,251	7,304	8,427	15,721
Sorghum	82,571	7,448	3,082	10,530
Wheat	106,396	4,263	2,834	7,097
Peas	12,196	949	937	1,886
Beans	16,347	388	447	835
Barley/Oats	1,008	253	94	347
Other	20,417	507	2,298	2,805
Total	368,186	21,112	18,109	39,221

Source: 1970 Census of Agriculture.

Yields for the districts in 1975/76 were mostly below the country-wide averages. This was especially true of maize and wheat (Table V-E-15) Although many agriculturalists contend that both maize and haricot beans are better adapted to the lower elevations, still maize, in particular, remains the most widely planted crop in the two districts. Maize is the base of the Basotho diet.

TABLE V-E-15

ESTIMATED AREA AND PRODUCTION OF CERTAIN CROPS, LESOTHO 1975/76

	Lesotho	Quthing	Qacha's Nek	Zone Total
Maize:				
Area (ha)	84,827	4,843	5,505	10,348
Yield (100 kg/ha)	5.79	4,87	4.03	4.45
Production (m tons)	49,128	2,357	2,219	4,576
Sorghum:				
Area (ha)	44,239	3,822	2,362	6,184
Yield (100 kg/ha)	5.55	6.95	4.19	5.57
Production (m tons)	24,540	2,655	990	3,645
Wheat				
Area (ha)	55,872	4,472	2,121	6,593
Yield (100 kg/ha)	7.99	7.01	5.76	6.39
Production (m tons)	44,640	3,135	1,221	4,356
Beans:				
Area (ha)	29,656	864	547	1,411
Yield (100 kg/ha)	2.92	1.27	3.13	2.2
Production (m tons)	8,650	110	171	281
Peas				
Area (ha)	10,134	595	676	1,271
Yield (100 kg/ha)	5.69	6.15	2.72	4.44
Production (m tons)	5,763	366	184	550

Source: Bureau of Statistics

TABLE V-E-16

LIVESTOCK HOLDINGS, LESOTHO, 1976

	Lesotho	Quthing	Qacha's Nek	Zone Total
Cattle	485,500	34,600	39,900	74,500
Sheep	1,123,000	109,100	170,600	279,700
Goats	617,500	80,500	74,700	155,200
Horses and Donkeys	192,600	12,700	18,500	31,200

Source: Preliminary estimates, Bureau of Statistics

Livestock: The two districts rank much better in livestock holdings than in crop production. In the 1976 census, the region reported 434,900 sheep and goats, or 25 percent of the country total. For cattle the holdings were 74,500 and the percentage was 15, it was about the same for other livestock. The proportion of holdings located in the two districts was some 10 percent higher than in 1970. Average individual holdings of major livestock in 1970 were:

TABLE V-E-17

INDIVIDUAL HOLDINGS OF LIVESTOCK

	Lesotho	Quthing	Qacha's Nek
Cattle	5.9	6.6	7.3
Sheep	30.5	72.8	60.9
Goats	17.9	25.6	33.1
Horses and Donkeys	2.0	2.0	2.6

The tendency to build larger flocks of sheep and goats is very apparent in both Quthing and Qacha's Nek. In relation to land area, the districts account for about 34 percent of the country. On this basis alone, the region would not appear to be more heavily stocked than Lesotho as a whole. This condition can change if the recent imports of livestock have been relatively larger in the two districts than in the rest of the country. Because of the proportionately large holdings of sheep and goats, it is obvious that the region is contributing more to livestock production than would be indicated by the relative population; it is primarily a livestock area.

Farm Households: More than 95 percent of farm households in 2 districts were classified in 1970 as being mainly subsistence units. The average size of land holdings ranged from 1.7 - 20 hectares; for the entire country the average was 2.0 hectares. Cropland is usually in 1 to 3 fields, often separated by a considerable distance, but the most common holding is two fields. In Quthing, 47 percent of the rural households had no livestock and 18 percent had no land. Qacha's Nek reported 47 percent without livestock and 11 percent without land. There was reasonable uniformity in the holdings and composition of the farm units throughout the region and regional averages do not vary greatly from those for the entire country.

In Quthing and Qacha's Nek only 28 and 36 percent respectively of the households held no sideline jobs. The average for Lesotho was 37 percent without outside employment.

In 1970, less than 5 percent of the farm households in the region were using chemical fertilizers but over 35 percent reported using pesticides. Quantities were not great, however. Usage of fertilizer has been increasing and for the country it was estimated at 6,000 metric tons in 1974. Limited quantities of improved seeds and miscellaneous farm tools are now distributed in the two districts but the use of such inputs is clearly minimal. The GOL is aiming at a 38 percent increase in agricultural output during the five years ending 1980. If this ambitious goal is to be achieved, it is obvious that large quantities of inputs must be used. Easily accessible and low cost transport would facilitate the movement of inputs into such areas as those served by the Southern Perimeter road.

Marketing: Private traders operate in the towns and villages throughout the two districts. These dealers buy and sell any surplus crops the local farmers may offer and distribute imported foodstuffs. They also handle some of the wool and mohair for export and occasionally deal in livestock. Co-op Lesotho Ltd. has depots at Mt. Moorosi, Mphaki, White Hill and Qacha's Nek where both inputs and marketable produce are handled. Operating mostly through agents, including Co-op Lesotho, the Produce Marketing Corporation is another organization that is beginning to serve the region through sale of inputs and marketing of crops.

Similarly, the Livestock Marketing Corporation has responsibilities in connection with the export and pricing of wool, mohair and hides and skins. Livestock marketing locations in the region include Quthing, Koali, Mphaki, Seforong, Qacha's Nek, Sehlabathebe, Sehonghong and Milikane. There are now 24 woolsheds in the two districts where sheep and goats are shown and some space is provided for storage of the clip. One additional bulking shed is planned for the region in the near future—in Qacha's Nek. Currently there are also 3 livestock auction points adjacent to the road.

Most of the marketing facilities in the region are tributary to the Southern Perimeter road. There is total agreement among those conversant with the local marketing situation that improvements in transport are a prime requisite of any program to upgrade marketing of both inputs and outputs in the region.

Agriculture Development Programs and Agriculture Research: In recognition of the very important place that agriculture occupies in the economic and social structure of the Kingdom, the GOL is devoting a substantial part of its development effort to agricultural projects throughout the country. Several of these projects are having or will have a direct bearing on the rural sector of the two districts. The more important of these programs are:

The Senqu Project (FAO) is centered in Mohale's Hoek and Quthing districts. The entire extension service in these two districts was assigned to implement Senqu (now subsumed within BASP) with the purpose of concentrating the extension effort by giving special attention to

several core areas. Constraints on agricultural development have been identified, block cooperative farming has been initiated and distribution points for inputs have been established. On the livestock side attention has been given to dipping and dosing, group ranching and small dairy farms. Results thus far indicate that both livestock and crop productivity can be significantly increased.

BASP is to be the focal point of the GOL effort to improve dryland farming during the Second Plan period. The approach to this program is slightly different than in the large area-based projects such as Senqu and Thaba Bosiu. Through BASP, it is hoped to bring about a gradual improvement in the traditional farming system by improving practices so as to obtain higher yields. It is assumed that if Lesotho farmers have access to agricultural inputs and service, they will adopt improved practices leading to higher production and income. The intent is to make fertilizer, seeds, pesticides, animal feed and supplies etc., along with limited credit, available at the village level and to step up the extension effort at the same time. There will be BASP development units in the zone of influence through which input, marketing, machinery and extension services are to be provided. Currently a BASP area extends from Mohale's Hoek to Mount Moorosi.

It is clear that improved transport will be an essential element in determining the success or failure of the BASP effort.

Projects relating to livestock production that affect the two districts consist mostly of the general country-wide programs aimed at upgrading of sheep and goats, provision of livestock improvement centers and/or woolsheds, improved range management and better animal health. A merino stud center is located in Quthing and the Senqu project has experimented with the fattening of beef cattle. To a limited extent, improved dairy cattle will be introduced in the region and breeding stock upgraded. Range management is aimed at reduction of both over-grazing and erosion; this program faces serious obstacles due to the local land tenure system and increasing imports of livestock from RSA. In the animal health program, emphasis is on disease prevention thorugh such means as dip tanks, dosing and vaccination. These services are expected to be provided throughout the region particularly through 9 existing livestock improvement centers. Again, improved accessibility to the area will be an important factor in determining effectiveness of the program.

The Mphaki Mountain Livestock Development Project is to be operated in the mountain zone of Quthing district and will straddle the road from Mt. Moorosi to Sekake's. The project hopes to improve levels of crop and livestock production in a mountain area of 72,000 ha. involving some 3,000 households. The project envisages no increase in yields the first year, 10 percent the second, 20 percent the third and 30 percent the fourth and succeeding years. The overall objective in livestock is a 50 percent increase in production of animals, mohair and wool. To achieve anything resembling these ambitious goals, it will be necessary

to move rapidly in the application of improved practices which cannot be applied without better transport services into the Mphaki project.

Marketing of crops and livestock products is another facet of the GOL program for agricultural development. These activities are conducted mostly by the PMC and LMC; their functions in the districts have been outlined elsewhere in this section.

In its current program for the agricultural sector, the GOL is emphasizing a more intensive effort on existing croplands and an upgrading of livestock,along with conservation measures to control and/or prevent erosion. In light of the fact that there is little or no additional land suitable for cultivation and that rangelands are already heavily stocked, there are few, if any alternatives to the course of action that has been adopted. Emphasis is logically placed on producing (1) a larger share of the requirements for local consumption and (2) maintaining and expanding the output of commodities for export. Crops such as seed potatoes, asparagus, pulses and fresh produce may supplement the traditional cereals. On the livestock side, dairy and poultry enterprises are being considered. In the two districts tributary to the Southern Perimeter road, there is one scope for new enterprises but the major benefits are likely to come from more intensive and efficient use of the existing crop and range lands in producing the traditional products. The deteriorating land resources of Lesotho are a matter of real concern in the two districts, as well as in the country at large. The impact of the improved road on land use should generally be positive; particularly if the package of improved agricultural practices contemplated by the GOL is applied judiciously. The resources available for agricultural development are limited; they can best be used where impact, economic and otherwise, is most favorable.

Two national establishments engaged in agricultural commerce will have an enhanced capability to aid the farmer if access to him is facilitated. The Produce Marketing Corporation (PMC) is building a flour mill to which it hopes to attract most of the wheat grown in Lesotho. The PMC will also engage in the wholesale trade of agricultural inputs or production aids such as fertilizer, insecticides and seed. It may be associated with Coop Lesotho, an organization that has a number of distribution points already established in rural locations.

Both organizations operate principally as purchasing agencies for the farmer--the first at the wholesale level and the latter at retail. They are also prepared to market agricultural produce but not including livestock or its products.

The Livestock Marketing Corporation (LMC),which has been trying to perform all marketing functions forlivestock including the marketing of wool and mohair, is reorganizing its operations to work more closely with private traders.

Proposed Livestock Movements: An important element in the commerce of the area is the forthcoming construction of a central abattoir in Maseru to which it is hoped that all cattle will be sold. It will have a capacity of 100 head of cattle a day at first and will be enlarged to include lines for small animal slaughter, probably at the rate of 200 head per day. Products are to be exported, so strict international sanitary and meat packing standards will be followed.

Three routes have been proposed for the sending of cattle from the zone of influence to Maseru. The first two will take cattle from eastern Quthing District and from Qacha's Nek District by routes generally following the Sekake's-Semonkong-Maseru and the Qacha's Nek-Thaba Tseka-Maseru roads. It is expected that these herds will trek all the way.

The third route would take cattle from Quthing District west of Mphake and from Mohale's Hoek. It is planned that these cattle will be trucked. This will be more feasible if the road is improved.

Truck transport costs will be measured against trekking costs of approximately 6 kilos of meat lost per day per animal for the first five days, plus lower losses thereafter as well as feeding costs at resting points along the way. Herd movement is at the rate of 10 to 15 miles per day. Weight loss does not start to be made up until the animals have been fed at the final feedlot for at least 30 days. Costs will also have to be balanced against transport costs to Republic of South Africa points such as Matatiele and Zastron. If the Lesotho Government imposes restrictions against the export of cattle, these movements to RSA markets will have to be clandestine and would be difficult to accomplish by truck.

When slaughter facilities for sheep are completed all of the animals will have to be transported to Maseru by truck since they cannot trek for long distances. If 50,000 sheep are slaughtered per year, as planned, at least 18,100 of them, or 36.2 percent (the zone of influence's proportion of the total sheep population) or 50 sheep per day will be supplied from the zone of influence. If 35 sheep per truck are transported, an average of approximately 1.5 trucks a day will leave the zone of influence's for the abattoir in Maseru. However, with the availability of a good road from the area, it is possible that as much as double this amount will originate from the zone of influence, or 3 trucks per day each way. Most of them will originate in Qacha's Nek District, which contains 15 percent the total sheep population.

At present, it is planed that most of the beef will be canned, since the quality of the cattle stock, especially after long treks, will be low. If better meat of better quality can be raised, it is likely that trucking will increase in order to retain animal weight.

In summary, the agricultural potential of the zone of influence has not yet been exploited. Increased crop and livestock productivity depends substantially on improved access to inputs extension and marketing services, all of which will become more readily available once the project road is upgraded.

Tourism: It has already been pointed out that the overall potential for tourism in Lesotho is excellent. The most important characteristics to lure the traveller are mountain scenery, climate, and historical, archeological and paleontological sites. Yet except for the surge in visitors occasioned by the opening of the Holiday Inn and its casino in Maseru in 1970, tourism has not not increased rapidly. The major shortcomings are absence of easy access, i.e., good or at least passable roads, and little investment infrastructure, especially accommodations.

Nevertheless, in terms of potential, the road under study passes near or through some remarkably scenic and interesting areas. Historic and prehistoric sites abound.

The project area therefore provides a great opportunity for the development of a different market than that represented by the Holiday Inn. This is for the more adventurous, outdoor-oriented traveller who will be interested in pursuits which will vary from serious sport fishing, camping, canoeing the Senqu, research in archeology, or sightseeing. He will normally wish to make a circular route arriving from Mohale's Hoek or the Telle Bridge, and exiting in the Transkei at Qacha's Nek. He will be even further attracted if he can choose the alternative, completing his tour via Semonkong or Thaba Tseka, and has the opportunity of visiting Sehlabethebe Park. This traveller will come by car, or camper and may wish to tow a trailer. He will seek accommodations in camps and relatively simple hotels such as exist in Qacha's Nek or Quthing, but seldom have accomodations. He would be very attracted by the lodge at Makae's if the toilet, fridge, cooker and lighting worked, which they do not at present. When the remainder of the road work is completed he will not only benefit the project area but he will also bring revenue to other parts of Lesotho as he completes his circuitous journey.

In the "Development Plan for Tourism", formulated by Associated Research Consultants Ltd. of Nairobi, three lines of expansion were recommended for nation-wide tourist development. The first circuit was described as leading along the road under study to Qacha's Nek, then beyond to the Sehlabethebe National Park, thereafter proceeding north and swinging back to Maseru. Along this route two new National Parks are proposed. One would be located at Ongeluk's Nek in the Quthing District. The other would be called the Orange River Gorges and would include spectacular cave formations, many rock paintings and the highest and steepest cliffs in Lesotho.

The tourist studies available for review all point out that Lesotho at present offers only very limited tourist facilities. One study states frankly that the name of tourism so far in the country is Maseru, not Lesotho. With better roads and minimal accommodation, however, it is felt that South Africans, most of whom enjoy a rugged, outdoor life, can be attracted to the scenic attractions of the country that lie beyond Maseru.

A program of increased accommodations along what the "Development Plan" terms the Southern Lesotho Tourist Circuit, is presented in the following table:

TABLE V-E-18

Establishment	No. of Additional Rooms
Masitise Mission (Ellenberger's Cave)	8
Quthing	16
Makoae's Lodge (Quthing River Valley)	12
Ongeluk's Nek National Park	10
Qacha's Nek Casino	280
Sehlabethebe Royal National Park	20
Thaba Tseka	16
Mantsonyane	16
Marakabel	16
Mountain Road Resort	32
Total new rooms	426

According to the Tourist Board, none of these projects has as yet been implemented, even though they were proposed in 1974. The main reason given is the absence of a hard-surfaced or all-weather road from Maseru to the various locations.

A good,hard-surfaced or all-weather road would clearly help to bring to fruition and clearly demonstrate the many tourist opportunities that exist in the zone of influence.

3. Cost-Benefit Analysis

a. Methodology:

Standard economic procedures have been utilized for determining the economic return on this project. Project costs are calculated based on the cost of final engineering design, road construction and engineering supervision, and road maintenance. Road maintenance costs are established for 20 years for the road.

Quantifiable economic benefits have been conservatively limited to user savings accumulated through the lesser operating costs over an improved surface and the shorter and higher quality alignment, and to road maintenance savings where maintenance costs with the project are less than maintenance costs without the project (e.g. for the existing road). Due to a paucity of data and limited time the consultants could not quantify benefits (or related costs) in the two sectors--agriculture and tourist--which are expected to receive major impetus in the zone of influence due to the upgrading of the road. Other quantifiable benefits which, although not included in this analysis, should be mentioned are added employment and expenditures on wages and salaries to Basotho employees hired specifically to work on road construction.

Road user benefits are calculated from savings in vehicle operating costs.

The benefit analysis below discusses project economic benefits obtained from decreased vehicle operating costs based on delta-L values and from the shortened alignment (209.3 km. to 155.2 km.).

A final benefit is the residual value of structures beyond the life of the project. Under normal economic practices 100 percent of earthworks and 50 percent of structure construction costs may be considered residual value or benefits.

Two sensitivity analyses were carried out. The first increases construction costs by 20 percent, the second decreases benefits by 20 percent.

b. Traffic Analysis:

Data on road traffic in Lesotho is neither plentiful nor detailed. Except for the Lesotho Transportation Survey conducted in 1973 by Roughton and Parners, no comprehensive origin and destination studies have been made. Traffic counts are available for six categories of vehicleson the road between Mohale's Hoek and Qacha's Nek only for three years: 1970, 1973, and 1977. Especially with the very light traffic on some links trend analysis based only on three years of recorded data is risky if not dangerous.

In the absence of sound trend data, reliance has been placed on major economic indicators and their projected growth rates. These include population, gross domestic product, and vehicle registrations. The projected growth of production in the agricultural sector and prospective increases in tourism within the zone of influence of the road have also been considered since these two sectors will generate a substantial amount of road traffic. In considering production growth in the agricultural sector, increases in the volumes of inputs for agricultural production as well as increases in that production have been taken into account.

TABLE V-E-19

TRAFFIC LINKS

Links	Length (Km)
Quthing - Mount Moorosi	41.5
Mount Moorosi-Sekake's	115.0
Sekake's-Mpiti	42.1
Mpiti-Qacha's Nek	10.7

In analyzing traffic over the road, three categories of vehicles were selected: light vehicles including passenger cars, light pickups, landrovers and minibuses; large buses; and medium and heavy trucks. Traffic for each of these vehicle categories was projected over four separate links, chosen by reason of homogeneity in traffic volumes. These are shown on Table V-E-20.

TABLE V-E-20.

Traffic Projections by Vehicle Types (1977-1995
Quthing - Qacha's Nek

Road Link	Type of Vehicle	1977	80	81	82	83	84	85	86	87	88	89	90	91	92
1. Quthing/Mt. Moorosi	Light	51	76	116	128	142	158	175	196	219	242	267	296	328	363
2. Mt. Moorosi/Sekakes		16	24	27	59	63	68	74	80	87	94	102	111	121	132
3. Sekakes/Mpiti		29	43	49	84	92	99	109	121	134	146	160	176	194	214
4. Mpiti/Qacha's Nek		63	93	106	149	164	186	206	233	262	290	321	356	396	440
1. Quthing/Mt. Moorosi	Bus	6	8	11	12	13	14	15	16	18	19	20	22	23	25
2. Mt. Moorosi/Sekakes		6	8	9	13	14	15	16	17	19	20	21	23	24	26
3. Sekakes/Mpiti		4	5	6	9	10	11	12	12	13	14	15	16	17	18
4. Mpiti/Qacha's Nek		5	7	7	11	12	13	14	15	16	17	18	19	21	22
1. Quthing/Mt. Moorosi	Truck	27	38	56	62	67	74	81	89	98	106	115	126	137	149
2. Mt. Moorosi/Sekakes		4	6	6	22	23	24	25	26	27	29	30	32	33	35
3. Sekakes/Mpiti		17	24	27	45	49	53	57	62	68	73	79	85	92	100
4. Mpiti/Qacha's Nek		30	42	47	68	74	81	89	98	108	117	128	139	151	165
	TOTALS														
1. Quthing/Mt. Moorosi		84	122	183	202	222	246	271	301	335	367	402	444	488	537
2. Mt. Moorosi/Sekakes		26	38	42	94	100	107	115	123	133	143	153	166	178	193
3. Sekakes/Mpiti		50	72	82	138	151	163	178	195	215	233	254	277	303	332
4. Mpiti/Qacha's Nek		98	142	160	228	250	280	309	346	386	424	467	514	568	627

TABLE V-E-20 - Continued

1993	94	95	96	97	98	99
403	448	498	554	617	688	767
145	158	174	192	212	234	288
236	262	290	321	356	395	440
489	544	606	676	753	840	938
27	29	31	33	36	38	41
28	30	32	34	37	39	42
19	21	22	24	25	27	29
24	25	27	29	31	33	36
163	177	194	212	232	253	277
37	39	42	44	47	51	55
109	118	128	137	151	166	181
180	197	215	235	257	281	307
593	654	723	799	885	979	1045
210	227	248	270	296	324	385
364	401	440	482	532	588	650
693	766	848	940	1041	1154	1281

The links reflect the widely varying volume of traffic along the road. Between Quthing and Mount Moorosi, and between Mpiti and Qacha's Nek the road is in relatively good condition and carries considerable traffic. The other two links are located between Mount Moorosi and Mpiti where the road is difficult to traverse and where traffic is lighter.

As can be seen by an inspection of Table V-E-21, "Actual and Projected Traffic", the annual rates of growth in traffic by link between 1973 and 1977 have been extraordinarily high, ranging from 16.3 percent per annum to 57 percent per annum. Even allowing for extreme margins of error caused by taking only the two years for which data were generated, and errors likely to occur using such small numbers, these growth rates obviously cannot be maintained. A major reason for the high rates appears to be that most of the road was improved in 1975, 1976, and 1977, enabling more traffic to use it, at least periodically during the year.

In contrast to these high growth rates, the Lesotho Transportation Study projects an annual average rate of growth for traffic on secondary roads at 10.2 percent. However, the study recognized that traffic growth on various roads would vary widely by area and by region. This is because of the fragmented nature of Lesotho's economy. Nevertheless, the highest annual rate of growth recorded in the study was 22 percent.

In the analysis, in addition to the data presented in the Roughton Report on 1970 and 1973 traffic volumes, use has been made of the Ministry's traffic counts made in 1977. Both the 1973 and the 1977 traffic counts indicate that traffic density is highest at the two ends of the road. Traffic drops off substantially in segment 3 (Sekake's-Mpiti) and radically in Segment 2 (Mt. Moorosi-Sekake's) reflecting the poor conditions of the road.

TABLE V-E-21

ACTUAL AND PROJECTED TOTAL TRAFFIC (AADT)

Seg.	Km	Actual 1973	Traffic 1977	Annual % of Growth	1985	1990	1995	1999	Average Annual Projected Growth Rates
1	41.5	46	84	16.3%	271	444	723	1085	12.3
2	115.0	10	26	27 %	115	166	248	385	13.0
3.	35.	13	50	57 %	178	277	440	650	12.4
4	10.7	28	98	37 %	309	514	848	1281	12.4

After careful consideration of the potentials for regional growth and development in the two districts through which the road passes, anticipated growth in major economic indicators and the rather remarkable increases in traffic by link between 1973 and 1977, the following rates of growth have been assumed for each of the three categories of vehicles:

TABLE V-E-22

TRAFFIC GROWTH RATES

	1978-1987	1988-1999
Light Vehicles	14% pa	12% pa
Buses	10% pa	8% pa
Trucks	12% pa	10% pa

These are conservative in light of the growth rate apparently experienced between 1973 and 1977. On the other hand, they fall between the actual annual rates experienced and the ones projected in the Roughton Lesotho Transportation Study.

These traffic growth rates assume that while traffic has increased markedly from 1973 to 1977 due to minor improvements in the road, especially the EEC-financed "spot improvement" program, this increased traffic represents only a minor portion of the potential induced and annual traffic growth. This is because the temporary road improvements from the EEC program, which did not include installation of culverts and other drainage structures, have already largely been negated during the ensuing rainy season.* Hence the road is still quite dangerous and potential users are still faced with two major imponderables when contemplating its use: (1) the Qhoahi River has no bridge crossing and even a light rain can render it impassable for days; (2) much of the existing road surface is of inferior, high-plasticity side borrow material which, when wet (approximately 4-6 months), is impassable for even four-wheel drive vehicles.

* The 1977 count was taken before the onset of the rainy season, but after most of the EEC-financed work had been completed. The road, even after the EEC improvements, is unmaintainable at reasonable costs since there is no proper drainage. Hence, without this project, traffic is certain to decline back towards 1973 levels.

With any new or greatly improved road, induced traffic is bound to occur. This is the traffic that is attracted by reason of the new or improved road.

The following table gives the induced traffic assumed to occur when the improved road is opened. The opening date taken for segments 1 and 2 is 1981; for segments 3 and 4 it is 1982.

TABLE V-E-23

INDUCED TRAFFIC BY LINK AND VEHICLE TYPE (AADT)

Link	Light Vehicle	Bus	Truck	Total
I.	59	4	27	90
II.	56	5	29	90
III.	56	5	29	90
IV.	66	5	29	100

Induced traffic, often referred to as generated traffic, is a one-shot propostion. It generates only half the benefits that accrue from normal traffic. Induced traffic cannot be included in annual growth rates of traffic since, being a one time event, it does not grow along with normal traffic. For purposes of calculating vehicle operating costs, induced traffic is included in full for the first year of opening of the road. Thereafter, one-half of the induced traffic has been added to the projected traffic volumes.

In addition to the factors discussed above, there are two others that could affect the projected traffic volume on the road. One would be the complete closure of the border crossings between Lesotho and Transkei at Qacha's Nek, Ongeluk's Nek and Ramatseliso's Gate. Since no acceptable origin/destination studies are available for the Southern Perimeter Road, the effects of a complete closure must be based on certain assumptions of traffic origin/destination and therefore are somewhat speculative. It is likely that traffic volume on the road would increase under these circumstances. Most traffic entering Lesotho at Qacha's Nek is local in nature carrying passengers and goods to Qacha's Nek town and at times on to Mpiti. Passengers and goods continuing to other points in the Qacha's Nek district are normally reloaded and transported by local carriers. Traffic entering Lesotho at Ongeluk's Nek and Ramatseliso"s Gate is minimal. Thus traffic loss will not be substantial and will be largely limited to the immediate Qacha's Nek area.

At the same time if supplies from South Africa via Transkei are cut off, the region between Mount Mocrosi and Qacha's Nek will have to be supplied from Maseru, Mohale's Hoek and Quthing. Except for limited foodstuffs produced in Lesotho most goods would continue to be of South African origin, transported to Mohale's Hoek and Quthing from Zastron and to Maseru from Bloenfontaine. These goods and all passengers traveling to the Qacha's Nek district would have to travel over the improved Southern Perimeter Road. In sum, a closed system would almost certainly result in significant increased traffic over the full length of the road.

A second extraneous factor that might affect traffic volume is the upgrading of potentially competing roads. The GOL hopes to upgrade the Roma-Semonkong road to gravel 3 standards and extend it to Sekake's with German assistance. The GOL also hopes to upgrade the Thaba Tseka-Mpiti road to gravel 3 standards with Canadian assistance. As discussed earlier if the roads are improved at the proposed standards, travel times from Qacha's Nek to Maseru will still be shorter via the higher standard Southern Perimeter Road. In addition supply trucks would tend to utilize the Southern Perimeter Road which passes through a more populous area. Thus these potentially competing roads, if upgraded (and extended in the former case), would not seriously diminish traffic volume on the Southern Perimeter Road.

c. Cost Analysis:

Project costs are based upon the Berger Feasibility Study and include final design, engineering supervision and construction costs for the road from Quthing to Qacha's Nek as well as maintenance costs for the road. The construction costs include the costs of special measures to protect the environment—e.g. hydro-seeding and paving through major towns. The additional costs of reinforcement of the Seaka Bridge ($120,000) are also included since the bridge is a vital link in assuring traffic flow between the Southern Perimeter Road and Maseru. However, final design of the Mohale's Hoek-Quthing road ($200,000) is not an essential part of the project and these costs are not included. It is being financed only in order to allow for the timely construction of this 50 kilometer segment of road should AID or other donor funds become available in FY 79. Only net costs to the national economy are computed. No transfer payments such as taxes, fees, or import duties are included in cost estimate.

Annual maintenance costs have been calculated by Berger based upon the following formulae:

Existing road: MC = 400 + 1.0 (L.V.) and 3.0 (M.V.)

Gravel Segments:

MC = 350 + 1.0 (L.V.) + 3.0 (M.V.) + 2.5 (ADT - 200)

Paved Segments :

MC = 500 + 0.1 (L.V.) + 1.0 (M.V.) + 1.0 (ADT - 400)

The maintenance costs will be less on the upgraded road than on the existing road. These maintenance savings are considered economic benefits in the cost-benefit analysis.

TABLE V-E-24

MAINTENANCE COSTS PROJECTED: ADDED COSTS AND (SAVINGS)
(1,000's U.S. 1978)

	Segment 1	Segment 2	Segment 3	Segment 4	Total
1980	(5.5)	(22.0)	(5.6)	(1.7)	(34.8)
1981	(5.9)	(22.3)	(5.7)	(2.0)	(35.9)
1982	(9.3)	(25.8)	(6.5)	(2.9)	(44.5)
1983	(11.5)	(26.2)	(6.6)	(3.3)	(47.6)
1984	(12.8)	(26.7)	(6.8)	(3.7)	(50)
1985	(14.2)	(27.1)	(7.0)	(4.1)	(52.4)
1986	(15.8)	(27.6)	(7.2)	(4.6)	(55.2)
1987	(17.6)	(28.2)	(6.1)	(5.1)	(57)
1988	(19.3)	(28.9)	(4.8)	(5.4)	(58.4)
1989	(21.1)	(29.4)	(3.2)	(5.6)	(59.3)
1990	(21.8)	(30.2)	(1.5)	(5.7)	(59.2)
1991	(22.2)	(30.9)	(0.5)	(5.9)	(58.5)
1992	(23.4)	(31.8)	2.7	(6.1)	(58.6)
1993	(24.4)	(30.8)	5.1	(6.4)	(56.5)
1994	(25.4)	(28.9)	7.9	(6.7)	(53.1)
1995	(26.5)	(25.8)	10.8	(7.0)	(48.5)
1996	(27.8)	(22.8)	14.1	(7.4)	(43.9)
1997	(29.2)	(19.4)	17.8	(7.7)	(38.5)
1998	(30.6)	(15.6)	22.0	(8.1)	(32.3)
1999	(32.3)	(11.5)	26.7	(8.6)	(25.7)

d. Benefit Analysis:

Project benefits have been estimated based on road maintenance cost savings (discussed above) and savings in vehicle operating costs (VOC). In addition, residual benefits from earthworks (100% of cost) and structures (50% of cost) have been estimated following standard economic procedures. VOC costs provide by far the most substantial benefits to the economy of Lesotho.

The approach used in the Berger study to determine operating costs by vehicle type and road standards was based initially upon cost data gathered and presented in the Lesotho Transportation Study of 1973. The detailed data are presented in Table

Since those data reflect 1978 prices, an annual inflation factor, averaging 13 percent, was applied to the 1973 costs.

The 1973 costs were obtained before the very large increase in world prices of petroleum products. To take this increase into account, the costs of the 1973 study for fuel, oil and lubricants were increased by 40 percent in addition to the annual inflation factor.

Spot checks were made at the pump to compare actual prices, on tires and on car insurance. The formula used to obtain 1978 prices proved to be surprisingly close to actual costs.

Unlike the 1973 Transportation Study which used nine separate categories of vehicle operating costs, in the Berger report only eight are used. It was felt that occupant time savings, used in the 1973 study for occupants of light vehicles only, did not warrant a significant assignment of value.

The eight categories of operating costs and their value by vehicle type used in this study are also presented in Table V-E-25.

TABLE V-E-25

VEHICLE OPERATING COSTS KM.
(1978 U.S. Cents)

Cost Category	Light Vehicle	Bus	Truck
Depreciation	3.09	4.75	3.05
Interest	1.23	1.53	0.97
Insurance	0.93	2.25	1.12
Wages	0.15	5.83	2.20
Maintenance	2.31	5.37	4.11
Fuel, Oil and Lubricants	3.74	5.16	3.89
Tires	0.30	1.12	1.46
Overhead	0.59	4.94	3.14
Totals	12.34	33.00	19.94

The costs listed represent economic costs, which is to say net costs after the elimination of all transfer payments such as duties, taxes and license fees.

Vehicle operating costs differ by type and condition of road. The differences are caused by many factors, not the least of importance of which is driver skill. Assuming the same level of driver skill, however, the major conditions that contribute to differences in per kilometer vehicle operating costs are: type of surface, gradients, sharp curves and side friction. These differences are usually referred to as delta-L factors, and have been calculated for two-lane rural roads with three types of surfacing: earth, gravel and paved. Table V-E-26 gives the delta-L factors for the differences in vehicle operating costs depending on type and condition of road. These are expressed in the equivalent meters to be added per kilometer for surface and side friction above a flat, paved tangent road. The table also shows meters to be added for gradients over five percent and for sharp curves.

TABLE V-E-26

DELTA-L VALUES

(in meters)

Surface Type	Paved		Gravel		Earth	
Condition	Good		Good to Fair		Poor	
Vehicle type	Car	Truck Bus	Car	Truck Bus	Car	Truck Bus
Surface	0	0	750	1000	1500	2000
Gradients (over 5%)	500	900	1100	1800	2200	3600
Side Friction						
Light	400	500	100	100	100	100
Heavy	600	900	400	400	400	400
Sharp Curves	400	500	100	150	100	150

Several examples are given here to show the application of this table. It costs a truck or a bus the equivalent of two extra kilometers per kilometer to travel over a poor earth road when compared against a good paved road. If the earth road is one lane only with heavy side

CONDITION OF THE PRESENT ROAD

TABLE V-E-27

Traffic Link	Length Km	Surface Type	Sharp Curves (Aver. 30 M. Rad.)	Gradient Number	10 % Total Length (M)	Side Friction
Quthing						
	41.5	Earth	21	8	1600	Continuous and heavy over entire length of road
Mount Moorosi						
	115.0	Earth	26	15	3200	
Sekake's						
	42.1	Earth	35	1	200	
Mpiti						
	10.7	Earth	5	0	0	
Oacha's Nek						
Total:	209.3		87	24	5000	

friction, it costs a car the equivalent of 400 meters extra per kilometer when compared to a two-lane road with no side friction.

The conditions on the existing road are very poor. The surface is earth throughout its entire length. The road is very narrow and consists of only a single lane. Side friction is therefore considered heavy throughout its length. On 5000 meters of the existing road there are gradients above 10 percent. Some stretches are as high as 18 percent gradient. The road contains no less than 87 sharp curves, with radii averaging 30 meters.

Table V-E-27 details the conditions of the present road by each of the six traffic links. These have been used in applying the delta-L factors to determine vehicle operating costs for projected traffic by type of vehicle.

Another significant saving in vehicle operating costs over the present road as opposed to an improved road, stems from a proposed realignment that shortens the total length of the road considerably. Table V-E-26 shows the length of each traffic link on the present road, and the length proposed through realignment.

TABLE V-E-28

LINK LENGTHS, PRESENT AND PROPOSED ROAD

LINK	PRESENT (KM.)	PROPOSED (KM.)
Quthing - Mount Moorosi	41.5	35.3
Mount Moorosi - Sekake	115.0	75.9
Sakake - Mpiti	42.1	34.8
Mpiti - Qacha's Nek	10.7	9.2
Totals	209.3	155.2

The consultants have compared vehicle operating costs on the present dirt road with a two-lane number one gravel road, and also with a two-lane serviced road. The formula for determining vehicle operating costs on each road type is:

Annual VOC = pkmc x (Segment Km + delta-L) x 365 x AADT

where VOC = annual vehicle operating costs

pkmc = per kilometer vehicle operating costs

km = kilometers by link

365 = number of days in a year

AADT = annual average daily traffic as project by link and vehicle type

To obtain annual cost savings or benefits, the costs calculate for operating over gravel or paved segments of the road are subtracted from the costs incurred in operating over the present earth road. This calculation results in a projected stream of benefits for the improved road.

d. Economic Justification:

Table V-E-29 presents project cost and benefit streams. The project's internal rate of return is 17.2 percent which is considered acceptable when compared to the opportunity cost of capital of approximately 10-12 percent in Lesotho.

Sensitivity tests applied to the economic analysis assumed increased project costs in the first instance and decreased VOC and maintenance savings in the second.

Assumption	Economic Return %
Best estimates	17.2
Best estimates except:	
20% increase in project costs	14.9
Best estimates except:	
20% decrease in project benefits	14.5

SOUTHERN I[illegible]ETER ROAD

TABLE V-E-29: ECONOMIC COST AND BENEFITS
(1,000's US 1978 $)

	Capital Costs	Vehicle Operating Cost Savings	Maintenance Cost Savings	Total Net Benefits (Costs)	10 Percent	20 Percent	17 Percent
1978	600			(600)	(600)	(600)	(600)
79	350			(350)	(318)	(292)	(299)
80	11,605		35	(11,580)	(9,565)	(8,036)	(8,465)
81	11,605	1,893	36	(9,676)	(7,602)	(5,602)	(6,038)
82		2,779	45	2,824	1,929	1,361	1,508
83		3,010	48	3,058)	1,899	1,229	1,394
84		3,276	50	3,326	1,876	1,114	1,297
85		3,557	53	3,610	1,852	1,007	1,202
86		3,870	55	3,925	1,833	915	1,119
87		4,257	57	4,314	1,829	837	1,048
88		4,608	58	4,666	1,801	756	971
89		4,979	59	5,038	1,763	680	897
90		5,444	59	5,503	1,755	616	836
91		5,894	58	6,452	1,871	600	839
92		6,432	58	6,490	1,707	506	720
93		7,033	56	7,089	1,694	461	673
94		7,662	53	7,715	1,682	417	625
95		8,404	49	8,453	1,522	380	583
96		9,181	44	9,225	1,513	350	544
97		10,092	39	10,131	1,510	314	517
98		11,045	32	11,077	1,495	288	476
99		12,169	10,189	22,358	2,504	492	827
					14,285	(2,207)	774

Internal rate of return = 17.2 percent

ANNEX F

SOCIAL SOUNDNESS ANALYSIS

1. Social Setting

The social structure of Lesotho and the social setting for the project are discussed in detail in the Berger Feasibility Study and the Environmental Assessment. The Berger team included a sociologist with substantial African experience. The most pertient social characteristics which relate to this project are a) income distribution in Lesotho and the project area; b) Migratory labor and c) the role of women. These three characteristics are clearly inter-related.

Income Distribution

Lesotho's distribution of income is almost universally acclaimed for its equity (see Table V-F-1). Another way of describing Lesotho is to say that its poverty is equally shared among the total populace. The top 40 percent of the rural population earns about 47 percent of total income. Urban income is slightly less equitably distributed. The lowest 70 percent of the total population earned 15 percent of total income in Lesotho - an extremely equitable distribution.

Income distribution in the zone of influence seems to follow the Lesotho pattern. According to an IBRD report, income in the Senqu River Valley and the mountain regions is slightly above the Lesotho median, averaging between $188 and $198 annually. An in-depth study of the mountain area near Thaba Tseka, north of the project zone of influence, found annual incomes of about $170 per capita.

A 1975 survey of 176 farm households in the Mohale's Hoek and Quthing Districts (the Senqu project area) indicated that when living costs (average $421) are subtracted from gross income ($398) the net household income is in deficit by $23. This is explained by the reluctance to report income fully. However uncertain, these data are useful in identifying income and expenditure parameters.

A striking finding of the Senqu project studies is the small proportion of gross income derived from crop farming and livestock (28 percent) and the predominance of off-farm income (72 percent) including income from migrant workers (See Table V-F-2).

The breakdown of off-farm activities per farm household is shown on Table V-E-3. The ranking of beer-making as one of the three major activities seems to account for the large production and consumption of sorghum. Yield of the sorghum crop has held up better than other food crops.

TABLE V-F-1

DISTRIBUTION OF INCOME - LESOTHO

Percent earned by:	Rural Population	
	Farm Income	Total Income
Lowest 5%	2	4
Lowest 20%	9	16
Lowest 40%	22	33
Highest 40%	58	47
Highest 20%	33	26
Highest 5%	11	8

Percent earned by:	Urban Population	
	Total Urban Class	Excluding Expatriates
Lowest 5%	1	2
Lowest 20%	5	7
Lowest 40%	14	18
Highest 40%	72	65
Highest 20%	51	41
Highest 5%	26	14

Percent earned by:	Total Population	
	Total	Excluding Expatriates
Lowest 5%	3	4
Lowest 20%	15	16
Lowest 40%	30	32
Highest 40%	52	50
Highest 20%	33	30
Highest 5%	16	11

Source: IBRD Mission calculations based on the 1970 Census of of Agriculture Reps and the 1972/73 Urban Household Budget Survey Report

The "social activities"(shown in Table V-F-3) include expenses for and gifts from activities such as marriage, death, and Lobola and traditional rites. Trading includes sale of crops as well as shop owners and small traders.

The seeming reluctance to engage in crop farming may be explained by the generally low margin derived per acre as shown in Table V-F-4. Beans are attractive because the white haricot beans can be sold at a premium in the RSA since they are picked by hand and are free from foreign matter. Note also that the farmer will invest heavily in a crop for which there is a good return.

TABLE V-F-2

SUMMARY OF FARM HOUSEHOLD INCOME/EXPENDITURE

(Exclusive of Living Cost)

Particulars	Gross Income Cash (R)	% of Gross Income	Expenses Cash (R)	% of all Expenses	Net Income	% of all Net Income
Crop Farming	69	12	23	11	41	13
Livestock (less Equines)	88	16	17	8	61	17
Off-Farm Activities	288	51	164	81	124	36
Other Off-Farm Income	120	21	-	-	120	34
	R 565	100	R 204	100	R 346	100
	$ 650	100	$ 235	100	$ 398	100

Source: Farm Management Economic Terminal Report Senqu Project, June 1976.

TABLE V-F-3

OFF- FARM ACTIVITIES

INCOME/EXPENDITURE PER FARM HOUSEHOLD

	Expenses R	Income R	Net R	% of All Off-Farm Income
Social Activities	50-40	14.32	-36.17	-15
Trading	87.71	142.97	55.26	23
Village Bakery	N/A	1.77	1.77	0.7
Some Beer	10.40	38.44	28.04	11
Working for pay	13.84	87.40	73.56	30
undetermined	1.88	3.89	2.01	0.8
	R164.32	R288.79	R124.47	50
	$189	$322	$133	(rounded)

Source: Farm Management Economics Terminal Report-Senqu Project, June 1976.

TABLE--V-F-4

AVERAGE CROP INPUT/OUTPUT AND GROSS MARGIN

PER ACRE

CROP	Average Labor and material Acre/Input (R)	Average Yield Kgm Per Acre	Price per Kgm	Gross Return Per Acre (R)	Gross Margin (R)
Maize	5.58	231.7	0.055	12.74	7.16
Sorghum	8.00	219.4	0.066	13.16	5.16
Beans	18.94	185.7	0.37	68.69	49.75
Wheat	8.21	146.5	0.075	11.00	2.79
Barley	4.74	53.4	0.08	4.28	-0.46
Peas	4.58	35.6	0.077	7.11	2.53
Potatoes	48.15	352.0	0.09	31.68	-16.47

Source: Farm Management Economics Terminal Report on Socio-Economic Survey. - Senqu Project, Maseru, June 1976.

Data on household expenditure patterns in Lesotho and the zone of influence are no more precise than income data. A survey in the Senqu project area found that annual living costs for 176 households averaged $424 (see Table V-F-5). Food and clothing account for 58 percent of total expenditures. However as indicated in Table V-F-6 the expenditure patterns of migrant workers is substantially different, with higher outlays for livestock, building, and bride price.

TABLE V-F-5

LIVING COSTS

Consumer Goods or Other Expenses	(Rand)	Percent of Living
Food	119.30	32.5
Drinks	18.99	5
Stimulants	18.56	5
Soap & Detergents	15.06	4
Cosmetics	7.06	2
Light, Fuel, Batteries	25.27	7
Clothing	90.29	24.5
Stationery	7.50	2
School Fees	13.83	4
Taxes	15.44	4
Furniture	11.80	3
Undetermined Articles	3.78	1
Visits to Clinics	2.14	1
Building Repairs	4.55	1
Travels	7.64	2
Medical	7.49	2
	R 368.70	100
	$ 424.35	100

S e: Farm Management Econ. Terminal
R. .t on Socio-Economic Survey.
UN FAO - Masseru, June, 1976.

TABLE V-F-6

EXPENDITURE PATTERN OF CASH RETURN FLOW FOR INDIVIDUAL MIGRANT WORKER AND FOR THE ENTIRE ZONE, BASED ON R13.3 MILLION PER YEAR

Item	Individ. Value (R)	Zone Value (Million) (R)	Percent
Food and Clothing	R250	R7.31	55
Building	32	.93	7
Furniture	27	.80	6
Agriculture	67	.67	5
Livestock	50	1.46	11
Bohali (Bride Price)	36	1.06	8
Savings	23	.67	5
Other	13	.40	3
Total	R454	R13.30	100
	$522	$15.3	100

Adapted from: Migratory Wage Labour By A.C.A van der Wiel Lesotho, 1977 page 80.

Migratory Labor

Lesotho has the highest relative proportion of its population engaged in migratory labor of any African country. Basotho workers make up about one-fifth of South Africa's mining labor force. At any time about 50 percent of the Basotho male labor force (approx. 200,000) are migrants. The age distribution of migrants is shown in Table V-F-7. This shows that over three quarters of the men are absent during their prime working years between 20 and 40 years old.

The proportion of Basotho males working in South Africa does not differ substantially by region; therefore these patterns are probably appropriate for the project zone of influence.

TABLE V-F-7

COMPARATIVE ANALYSIS OF RESIDENTS AND MIGRANTS BY AGE

	Migrants		Residents	
Age	Percentage	Number	Percentage	Number
18-19	37	51	63	87
20-24	74	207	26	74
25-29	83	154	17	32
30-34	81	134	19	32
35-39	72	114	29	45
40-44	59	99	41	70
45-49	47	65	53	72
50-59	35	73	65	138
60 and more	11	20	89	164
Total	56	917	44	714

urce: A.C.A. van der Wiel, Migratory Wage Labor

Contract periods for migrants are normally six, nine or twelve months and migrants may extend their contracts to a maximum of two years. Once a migrant has served his initial contract he is guaranteed re-employment so long as he reports back within a stipulated period, which varies from six weeks to six months depending on length of service. 1/ The Median length of home stay between contracts is four to six months. 2/ In addition, migrants make home visits during their term of their contract. These visits may vary from two days to two to three weeks. Most common are weekend trips to visit wife and children. The frequency of these visits is low as indicated in Table V-F-8 and two-thirds of migrants do not make home visits at all.

TABLE V-F-8

DISTRIBUTION OF HOME VISTS DURING CONTRACT PERIOD OF MINE WORKERS

Number of Home visits	Number	Percentage	Average length Contract (months)
0	182	67	9.6
1	39	14	13.6
2	21	8	12.3
3	18	7	15.7
4 and more	12	4	18.3
Total	272	100	11.2

Source: A.C. A. van der Wiel, Migratory Wage Labour

1/ Van der Wiel A.C.A., Migratory Wage Labor, p.29

2/ ibid, table 20

Role of Women *

The increasing absence of adult males from most Basotho households has led to a modification in the traditional position of women in Lesotho. Women attend village "pitsos" (assemblies) and are encouraged to speak freely. Women vote and constitute a larger voting block than men.

Women receive more education than men because they are closer to schools as children (boys must work as herdboys) and also because their future husbands repay their parents for educational expenses. Twice as many girls as boys start school and girls tend to remain in school longer (half the girls remain in school to the end of standard 5 while half the boys drop out by the end of standard 2). Women predominate in administrative positions and in health and education. A chieftaness administers one of the country's nine districts. Finally, women are primarily responsible for agriculture, although migrant workers try to time home visits to help with plowing, planting and harvesting.

2. Effects on Social/Cultural Patterns

Sections 4-III and 5-II of the Environmental Assessment (EA) discuss the impacts of the proposed road on social and cultural patterns in the project zone of influence. The EA concludes that the improved road will have no negative impacts on the social structure of the region, but will have some positive impacts.

a. Population Movement

Normally an improved road pulls population towards its immediate vicinity. However experience in Lesotho does not suggest this phenomenon will occur. The "Mountain Road" was extended from near Roma to Matsonyane in central Lesotho in 1954 and 1959. Though it has fallen somewhat into disrepair, and is now being rebuilt, it has provided continuous service since those dates and has been regularly used by a bus service, trucks and automobiles. For much its length it passes through mountainous areas with little permanent population. However, the Senqunyane River Valley is heavily populated. The same enumeration areas were used for the 1966 and 1976 censi, but not, unfortunately, for the 1956 census. The percentage population increase between 1966 and 1976 for each enumeration area was plotted against distance from the road. The pattern of population change seems to be random, with a correlation ratio of 0.12, too low for significance, and a slight positive slope; i.e. the further from the road the greater the population increase.

Therefore it would not appear that the construction of the Mountain Road caused any significant movement of population towards the road itself. The Southern Perimeter Road is located in similar

*See "Women in Agriculture", Thaba Bosiu Rural Development Project, Sept. 1977.

terrain. The major constraint to settlement patterns appears to be the availability of cultivable land which is no more available near the road than elsewhere.

There are however an increasing number of landless rural families, presumably largely supported by migrant worker earnings. Since they cannot easily accompany the migrant worker into South Africa it is possible that the improved road might encourage them to move to the lowland towns, particularly Maseru, which are closer to most of the mines and where employment opportunities are greatest.

In sum, all indications are that the road will not in itself cause any significant population movement, however it should lead to public and private investment in tourism and agriculture and increased government services creating additional employment opportunities in the zone of influence. These will undoubtedly attract people but foreseeable plans are not of a scale to have a significant impact on total population distribution in the area.

b. Access to Goods and Services.

An improved Southern Perimeter Road will ensure the availability of basic foodstuffs, clothing and other consumer goods to the zone of influence even if the Transkei border is closed. Since Lesotho has very little industry, the source of these goods except for some foodstuffs will remain the same - South Africa. Supply of the zone by truck will become much more regular as the road becomes dependable.

The road will improve all social and public services by decreasing travel times and costs although the road will also generate demands for additional services. Hospitals and clinics can react to emergencies more quickly. For example, travel time from the Mpaki Clinic to the Quthing Hospital will be reduced from three to one and a half hours and from the Sekake's Clinic to the Qacha's Nek Hospital from two and a half hours to less than one hour. A system of feeder roads, proposed by the UN, would extend the improved health services into the far reaches of the zone of influence.

The quality of education within the zone should also improve. Travel for supervision and in-service training will be much easier. Teaching positions in the zone will become less onerous for teachers with families or business activities in Maseru or the lowlands. On a more general level it should be less difficult for the Government to keep good officials from all government services in the region's provincial towns. In summary the road will benefit formal and non-formal education by improving access for supervision, training for teachers and provision of educational services. Also, importantly, it will encourage good staff to stay in the area's schools.

c. Migratory Labor

It is unlikely that the road will lead to increased migratory labor flowing from the region into South Africa. Migratory patterns are roughly similar from all regions of Lesotho and accessibility to South Africa is not a major factor. One should note however that the upgraded road will improve the possibilities for workers in the Orange Free State mines, over half of the total from the zone, to return home for weekends and short periods (e.g. for planting and harvesting).

d. Tourism

The road will almost certainly lead to increased tourism, largely by South Africans. Until hotel facilities are improved, many of these tourists will travel by personal car or van and will be attracted by the prospect of camping in the scenic mountains of south-eastern Lesotho or visiting Sehlabathebe National Park. Also the project area is particularly rich in historical, archeological and paleontological resources. These consist of historic buildings and relics connected with the Moorosi War of 1879 and early Christian missions, fossils, fossil footprints and excellent Bushman rock paintings. The rock paintings are particularly vunerable to vandalism by tourists who sometimes try to break off the rock on which a painting has been made. Improved access to the region could greatly increase the rate of loss of these important features unless appropriate measures are taken. Under the project AID will provide funds for fencing of 5-7 sites. The GOL will provide guardians, guardian huts and maintain the fences. Also as part of final engineering design AID will provide funds for a qualified palentologist to work with a GOL-sponsored archeologist from the National University of Lesotho to locate sites of archeological and paleontological interest and recommend minor re-alignments to avoid their destruction during road construction.

3. Beneficiaries

In theory, the beneficiaries of the Southern Perimeter Road Project are the 165,000 inhabitants of the project's zone of influence. In reality, however, defining the beneficiaries is much more complex.

The direct beneficiaries of the project are those people who receive employment directly through the project (i.e. work on road construction) and those who will utilize the upgraded road. Due to the emergency nature of the project, labor intensive and force-account road construction techniques were rejected. Experimentation in labor intensive construction has just been initiated under IBRD/ILO auspices on small feeder roads in the Maseru District in anticipation of the possible massive repatriation of Basotho migrants working in South Africa. At present, however, with over 75 percent of all males aged 20-40 out of the country, labor intensive construction of a major road does not warrant serious consideration. Force-account construction under

Ministry of Works direction was considered by the feasibility study team but rejected since this construction procedure would be both more costly and more time-consuming (four year construction period).

Nevertheless a substantial number of Basotho will be employed on the road construction. In addition, if adequate labor is available labor intensive construction techniques will be used for masonry work (drainage) along the road.

The people who utilize the improved road will be those with personal vehicles or bicycles, those who have access to government vehicles, and bus passengers, whether they live in the project zone of influence or merely transit the area (tourists, merchants from Mohale's Hoek, Maseru, etc.). Vehicle owners are obviously a relatively wealthy segment of the population. Merchants and traders living in or servicing the zone of influence will be particularly benefited.

However, a project of this nature significantly benefits a much larger group of people, albeit indirectly. These are people who indirectly benefit from improved government services in the zone of influence, the increased availability of consumer goods and private services, and improved marketing channels for their produce. In addition, the zone populace will benefit indirectly from the accelerated development efforts which the GOL plans to carry out in the region and the employment and income generation therefrom. The extent to which the total population of the zone of influence can be deemed project beneficiaries coincides with their access to the road itself. The UN-sponsored feeder road project will greatly inhance the access of small mountain villages to the Southern Perimeter Road and hence will increase the benefits they receive from the road.

Benefits to the populace in the zone of influence are many and varied. Private vehicle cost savings and public maintenance savings can be quantified and are discussed in the Economic Analysis Section of this document. Many other benefits, usually termed social benefits, cannot be easily quantified. Some of the social benefits are briefly summarized below.

Education

- Improved access to schools.

- Reduction in cost of school supplies (e.g. costs of black boards and desks are said to double for every 100 Kms. of mountain road).

- Qualified teachers more apt to accept assignment and stay in the region.

- Improved educational administration and supervision.

- Improved access to non-formal education materials.

Health

- Improved access to clinics and hospitals and quicker transport from clinics to referral hospitals.

- Lower operating costs for health facilities due to reduction in freight and passenger transport costs.

- Improved health supervision and administration.

Agriculture

- Increased availability of inputs, agricultural extension and marketing facilities.

- Improved MOA supervision and administration.

- Reduced dependance on a single local trader.

- Reduced costs for farm equipment rental.

- Less loss in cattle weight as trucking to market substitutes for trekking.

Miscellaneous

- Improved tax collection.

- Increased distribution of newspapers, magazines and books.

- Reduction in bus and truck transport rates.

- Improved vehicle repair facilities as road traffic generates new businesses.

- Increased identification of regional population with GOL goals and aspirations.

In sum, OSARAC concurs with the findingsof the Berger Feasibility Study and the Environmental Assessment that the project road will have no significant negative impacts on the social structure of the zone of influence but will have some positive impacts.

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Project Title & Number: Lesotho Southern Perimeter Road (690-0076)

Life of Project: From FY 78 to FY 83
Total U.S. Funding:
Date Prepared: April 1978

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program or Sector Goal: The broader objective to which this project contributes: To develop a basic road network in Lesotho which will facilitate economic development and national economic integration and which will ensure all weather access to all regions of the country without resort to travel through So.Africa.	Measures of Goal Achievement: 1.Completion of road network described in Table II-B-1. 2.Decreased use of South African roads by Basotho for travel between regions of Lesotho.	1. MOW records 2. Border post records 3. Econ data compiled by various ministries.	Assumptions for achieving goal targets: MOW will have financial resources and trained manpower to maintain improved roads to all-weather standards.
Project Purpose: To upgrade the southern perimeter road, the basic transportation link between Qacha's Nek and the western lowlands of Lesotho, to all-weather standards.	Conditions that will indicate purpose has been achieved: End of project status: 1. GOL able to provision Southeastern and Southern Lesotho, decreasing dependence on Transkei border posts and on the South African transportation network.	1. Border post records. Ministry of Commerce & MOW statistics. 2. Traffic data AID-financed baseline and follow-on (1988) research studies.	Assumptions for achieving purpose: 1. RSA racial policies will not change drastically and Basotho will continue to object to travel through RSA. 2. GOL will continue to place emphasis on developing Southeastern and Southern Lesotho.
Outputs: 1. 2-lane road constructed between Quthing and Qacha's Nek. 2. Final design completed and tender documents prepared for road between Mohale's Hoek and Quthing. 3. Reinforcement of Seaka Bridge.	Magnitude of Outputs: 1. 101 km built to Gravel 1 standard; 54 km paved. 2. 50.3 km designed to paved standards. 3. Bridge capable of supporting 18 metric ton load.	MOW and AID records	Assumptions for achieving outputs: 1. Adequate AID funding available for project as proposed. 2. Detailed design indicates Seaka Bridge can be strengthened at reasonable cost and need not be replaced.
AID 1. An AEC contract for final design of the road from Mohale's Hoek to Qacha's Nek and for construction supervision of the road from Quthing to Qacha's Nek. 2. A construction contract for the road from Quthing to Qacha's Nek and for reinforcing the Seaka Bridge.	Implementation Target (Type and Quantity): (See Section IV Implementation planning)	MOW and AID records	Assumptions for providing inputs: Code 941 contractors available to provide project inputs at reasonable cost and within project time-frame.

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

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Life of Project: From FY 78 to FY 83
Total U.S. Funding: $
Date Prepared: April 1978

Project Title & Number: Lesotho Southern Perimeter Road (690-0076)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program or Sector Goal: The broader objective to which this project contributes:	Measures of Goal Achievement: 3. Increased economic development in regions not now well served by transport network.		Assumptions for achieving goal targets:
Project Purpose:	Conditions that will indicate purpose has been achieved: End of project status: 2. Improved access to Southeastern and Southern Lesotho, better integrating these areas into Lesotho's economy & providing stimulus for increased GOL efforts to		Assumptions for achieving purpose:
Outputs:	develop the resources of the region.		Assumptions for achieving outputs:
Inputs:	Implementation Target (Type and Quantity)		Assumptions for providing inputs:

GOL
1. MOW staff time for managing host country contracts.
2. Use of MOW facilities, such as soils lab by contractor.
3. Reimbursement to owners of expropriated buildings in right-of-way.
4. Assistance in identifying and maintaining archeological sites along the road.
5. Project local costs (office space, rental for contractors, local labor, etc).
6. Approx. 50% of all anticipated procurement in South Africa.

Annex V-H

DRAFT PROJECT DESCRIPTION

1. The Project

The project will consist of the design and construction of the Southern Perimeter Road in Lesotho from Quthing to Qacha's Nek and the design only of that portion of the road from Mohale's Hoek to Quthing. The road to be constructed under this project will be approximately 155.2 kilometers in length and will consist of a combination of paved and graveled surface roadways.

Under this Grant, A.I.D. will finance the costs of an engineering contract for design, construction, supervision and inspection and maintenance inspection of the project, and a contract for construction of the road. The Grantee's contribution is estimated at approximately $5,500,000 and will consist of the following components:

1) A cash contribution of $5 million (Rand equivalent) to finance contractor's local costs and a portion of the costs of contractor procurement in South Africa (vehicles, bulk commodities, misc. services);

2) The following costs which will be incurred directly by the GOL in kind or in cash:

   (a) Ministry of Works (MOW) staff time for monitoring the host country contracts for final design/construction supervision and construction services;

   (b) Use of available MOW facilities, such as the soils laboratory in Maseru, by the contractor;

   (c) Reimbursement to owners of the buildings to be demolished by changes in the right-of-way and alignment of the road;

   (d) Services of anthropologist, and other necessary personnel, to identify and help preserve anthropological and

paleontological sites discovered along the route of the project road. Additionally, the Grantee will provide guardians and will maintain fencing around identified sites, and will provide such other resources as may be necessary identify and preserve these sites.

A more detailed description of the project is as follows:

Paved Segment	1	Quthing to Mt. Moorosi	35.3 Kms
Graveled Segment	2	Mt. Moorosi to Sekake's	75.9 Kms
Graveled Segment	3	Sekake's to Mpiti	34.8 Kms
Paved Segment	4	Mpiti to Qacha's Nek	9.2 Kms
			155.2 Kms

The total paved distance for the project including some pavement through towns and for road sections with grades of 10% or higher, is 54 Kms. The remaining road length that will be gravel surface is 101.2 Kms.

An additional 50.3 Kms from Mohale's Hoek to Quthing will be designed on a paved basis and tender documents shall be prepared as a separate bid package for financing by other donors. This bid package shall be prepared for bidding on an international basis whereas Bid Package for the Quthing-Qacha's Nek road will be prepared for bidding by Code 941 firms only.

Additionally, the A.I.D. financed contracts will include design and remedial work of the Seaka Bridge.

II. Implementation

Except as A.I.D. may otherwise agree in writing, goods and services financed under the Grant shall have their source and origin in countries included in A.I.D. Geographical Code 941. The procurement of engineering services financed under the Grant shall be carried out in accordance with Chapter 1 of A.I.D. Handbook 11. Similarly, construction services shall be carried

out under Chapter 2 and procurement of equipment and materials under Chapter 3.

The Grantee shall enter into a contract for engineering services in approximately September, 1978. This contract will cover both the design and construction supervision phases, including services connected with the award of a construction contract, such as, prequalification of contractors, issuances of invitation for bids ("IFB"), and analysis of and recommendations on the responses thereto.

The following is a tentative schedule of major implementation actions. Given the emergency nature of this project the parties will attempt to adhere to this schedule to the maximum extent possible:

April 24, 1978	Pre-implementation action. Begin preparations of RFP for engineering services for engineering design of the complete road from Mohale's Hoek to Qacha's Nek and for supervision and inspection of construction of the road from Quthing to Qacha's Nek; REDSO/EA Contract Officer will assist on TDY basis. Final statement of work contingent on amount of funding authorized.
	— Bid tender documents shall be prepared for Code 941 competition only for those segments from Quthing to Qacha's Nek.
	— A separate bid tender document shall be prepared for international competition for the segment between Mohale's Hoek to Quthing.
June 21, 1978	Publish Commerce Business Daily Notice advertising RFP for engineering services as above. DS/ENGR, AID/W, to distribute RFP to interested firms.
August 5, 1978	Technical proposals with latest postmark of August 5, mailed in U.S. and subsequently received in MOW. One copy furnished to AID/W and one copy to Mission and one

	copy to REDSO/EA.
August 19, 1978	Detailed Technical Proposals received at MOW, GOL.
September 2, 1978	Consultants for engineering services rank-ordered to 1st, 2nd, 3rd. Cost proposal then requested of 1st choice firm and negotiations subsequently conducted.
September 23, 1978	Contract negotiations completed and contract signed.
October 23, 1978	Engineering contractor mobilized.
June 23, 1979	Final design field work completed.
July 14, 1979	AID review completed.
July 30, 1979	Commerce Business Daily Notice published for construction bids. Prequalification process instituted as appropriate.
October 30, 1979	Tenders in for Construction and subsequently evaluated and contractor selected.
November 30, 1979	Contract awarded for construction.
May, 1982	Construction completed.
May, 1983	One year road maintenance responsibility complete by contractors.

III. Project Administration

The Ministry of Works and, in particular the MOW's Road Branch, will be the principal implementing institution of the Grantee for this project. The Grantee will provide personnel and other resources to meet the administrative requirements of the project and monitor its progress. Such administrative requirements may include procurement

and management of services for the engineering and construction contractors, and making available for the use of the contractors laboratory and other facilities of the Ministry.

AID's project administration will be the responsibility of its OSARAC Office, with assistance from other regional AID personnel as required.

IV. Evaluation

A.I.D. will conduct evaluations of the physical progress of the project on an annual basis. The purpose of this evaluation will be to identify constraints inhibiting progress of the work. Of necessity, evaluation of the socio-economic impact of the project may not take place until well into the life of the project and beyond the PACD. The exact content of A.I.D. evaluations will be the subject of subsequent Project Implementation Letters.

V. Disbursement and Financial Plan

A.I.D. disbursements, as presently contemplated, will be made using the direct letter of commitment method. The precise method of disbursement will be the subject of negotiations between the Grantee and proposed contractors.

This is not an incrementally funded project; A.I.D.'s entire contribution to the project is obligated by this Agreement.

PROJECT AUTHORIZATION AND REQUEST FOR ALLOTMENT OF FUNDS

PART II

Country : Lesotho

Project Name : Southern Perimeter Road Project

Project Number : 690-0076

Pursuant to Part II, Chapter 4, Section 533 of the Foreign Assistance Act of 1961, as amended, I hereby authorize a Grant to Lesotho (the "Cooperating Country") of not to exceed twenty-six million United States Dollars ($26,000,000) (The "Authorized Amount") to help in financing certain foreign exchange and local currency costs of goods and services required for the project as described in the following paragraph.

The project will assist the Government of Lesotho to satisfy its national transportation requirements by providing design services for a road between Mohale's Hoek and Qacha's Nek, and construction supervision and construction services for a road between Qacha's Nek and Quthing. Upon completion of the road will provide all-weather access from Qacha's Nek to Quthing in the western lowland region of Lesotho.

I approve the total level of A.I.D. appropriated funding planned for this project during the period of FY 78 through FY 83 of not to exceed twenty-six million United States Dollars ($26,000,000) (The "Grant") subject to the availability of funds in accordance with A.I.D. allotment procedures.

I hereby authorize the initiation of negotiations and execution of the Project Agreement by the officer to whom such authority has been delegated in accordance with A.I.D. regulations and delegations of authority subject to the following essential terms and major conditions; together with such other terms and conditions as A.I.D. may deem appropriate:

a. Source and Origin of Goods and Services

Except for ocean shipping, goods and services financed by A.I.D. under the project shall have their source and origin in the Cooperating Country or in countries included in A.I.D. Geographic Code 941, except as A.I.D. may otherwise agree in writing. Ocean shipping financed under the Grant will be procured in any eligible source country except the Cooperating country.

b. Condition Precedent to Disbursement

Prior to any disbursement, or the issuance of any commitment documents under the Project Agreement, the Grantee shall furnish in form and substance satisfactory to A.I.D., an executed contract for design and construction supervision services with a firm acceptable to A.I.D.

c. Condition Precedent to Disbursement for Construction

Prior to any disbursement, on the issuance of any commitment documents under the Project Agreement to finance construction, the Grantee shall furnish in form and substance satisfactory to A.I.D. an executed contract for construction services with a firm acceptable to A.I.D.

d. Covenants

The Grantee shall covenant, substantially, as follows:

(1) The Grantee will covenant to provide all necessary personnel to support and monitor the design, supervision and construction services financed under the Project;

(2) The Grantee will covenant to provide the services of an archeologist fo other appropriate personnel to work with the design contractor to identify and preserve, to the maximum extent possible, paleontological and archeological sites located along the route of the AID-financed construction. The Grantee will also covenant to provide guardians and maintenance of fencing around 5 - 7 key sites, and assume all other responsibilities for preservation of these sites not borne by A.I.D.

(3) The Grantee will covenant that it will budget, for the period beginning at the Project Assistance Completion Date, funds necessary to adequately maintain the project road.

(4) The Grantee will covenant that it will consult with A.I.D. representatives on a periodic basis to discuss appropriate measures to enhance its capacity to maintain its road network. Such discussions would include, inter alia, the adequacy and allocation of the Grantee's budget for road maintenance, personnel recruitment, and implementation of recommendations stemming from studies of the Grantee's maintenance and equipment rental policies.

(5) The Grantee will covenant to provide AID with a financial plan acceptable to AID within 60 days of signature of the Project Agreement. The plan will detail the source, availability and uses of the Government of Lesotho's cash contribution ($5 million equivalent in Rand) to the project.

e. Waivers

Based upon the justification set forth in Section IV of the Project Paper, the following waivers to A.I.D. Regulations are hereby approved:

(1) The policy set forth in Handbook 11 limiting employment of nationals from non-eligible source countries to 20 percent of the non-local work force is waived.

(2) The requirement under Handbook 1 Supplement B that commodities procured with grants to countries on the U.N. list of relatively least developed countries have their source and origin in A.I.D. Geographic Code 941 is waived to permit procurement of approximately $2,250,000 of construction materials which have their source and origin in countries included in A.I.D. Geographic Code 935. Exclusion of procurement of these materials, from Free World countries other than the cooperating country and countries included in Code 941 would seriously impede attainment of U.S. foreign policy objectives and objectives of the foreign assistance program.

5C(1) - COUNTRY CHECKLIST

A. GENERAL CRITERIA FOR COUNTRY

1.	FAA Sec. 116. Can it be demonstrated that contemplated assistance will directly benefit the needy? If not, has the Department of State determined that this government has engaged in consistent pattern of gross violations of internationally recognized human rights?	(a) This project will benefit needy in southern and SE Lesotho (b) No such determination.
2.	FAA Sec. 481. Has it been determined that the government of recipient country has failed to take adequate steps to prevent narcotics drugs and other controlled substances (as defined by the Comprehensive Drug Abuse Prevention and Control Act of 1970) produced or processed, in whole or in part, in such country, or transported through such country, from being sold illegally within the jurisdiction of such country to U.S. Government personnel or their dependents, or from entering the U.S. unlawfully?	No such determination has has been made.
3.	FAA Sec. 620(a). Does recipient country furnish assistance to Cuba or fail to take appropriate steps to prevent ships or aircraft under its flag from carrying cargoes to or from Cuba?	No
4.	FAA Sec. 620(b). If assistance is to a government, has the Secretary of State determined that it is not controlled by the international Communist movement?	Yes
5.	FAA Sec. 620(c). If assistance is to government, is the government liable as debtor or unconditional guarantor on any debt to a U.S. citizen for goods or services furnished or ordered where (a) such citizen has exhausted available legal remedies and (b) debt is not denied or contested by such government?	No
6.	FAA Sec. 620(e) (1). If assistance is to a government, has it (including government agencies or subdivisions) taken any action which has the effect of nationalizing, expropriating, or otherwise seizing ownership or control of property of U.S. citizens or entities beneficially owned	No

by them without taking steps to discharge its obligations toward such citizens or entities?	
7. FAA Sec. 620(f); App. Sec. 108. Is recipient country a Communist country? Will assistance be provided to the Democratic Republic of Vietnam (North Vietnam), South Vietnam, Cambodia or Laos?	No.
8. FAA Sec. 620(i). Is recipient country in any way involved in (a) subversion of, or military aggression against, the United States of any country receiving U.S. assistance, or (b) the planning of such subversion or aggression?	No
9. FAA Sec. 620(J). Has the country permitted, or failed to take adequate measures to prevent, the damage or destruction, by mob action, of U.S property?	Lesotho has neither permitted nor failed to take adequate measures to prevent damage or destruction of U.S. property
10. FAA Sec. 620(l). If the country has failed to institute the investmnet guaranty program for the specific risks of expropriation, inconvertibility or confiscation, has the AID Administrator within the past year considered denying assistance to such government for this reason?	No such denial has been considered
11. FAA Sec. 620(o); Fishermen's Protective Act, Sec. 5. If country has seized, or imposed any penalty of sanction against, any U.S. fishing activities in international waters,	
a. has any deduction required by Fishermen's Protective Act been made?	No such actions.
b. has complete denial of assistance been considered by AID Administrator?	
12. FAA Sec. 620(q); App. Sec. 504. (a) Is the government of the recipient country in default on interest or principal of any AID loan ot the country?	No
(b) Is country in default exceeding one year on interest or principal on U.S. loan under program for which App. Act appropriates funds, unless debt was earlier disputed, or appropriate steps taken to cure default?	No
3. FAA Sec. 620(s). "If contemplated assistance is development loan (including Alliance loan) or security supporting assistance, has the Administrator taken into	For 1976/77, defence related expenditures represented 2.3 percent of the GOL budget expenditures. N money has been spend on sophisti-

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account the percentage of the country's budget which is for military expenditures, the amount of foreign exchange spent on military equipment and the amount spent for the purchase of sophisticated weapons systems?" (An affirmative answer may refer to the record of the taking into accountc e.g.: "Yes as reported in annual report on implementation of Sec. 620(s)." This report is prepared at the time of approval by the Administrator of the Operational Year Budget.	cated weapons systems. annual report on implemen. for of Section 620 (s) which indicates that the Administrator has taken into account these factors in the determination to provide security supporting assistance.
14. FAA Sec. 620(t). Has the country severed diplomatic relations with the United States? If so have they been resumed and have new bilateral assistance agreements been negotiated and entered into since such resumption?	No, not applicable.
15. FAA Sec. 620(u). What is the payment status of the country's U.N. obligations? If the country is in arrears, were such arrearages taken into account by the AID Administrator in determining the current AID Operational Year Budget?	There is no indication of any arrears.
16. FAA Sec. 620A. Has the country granted sanctuary from prosecution to any individual or group which has committed an act of international terrorism?	We have no knowledge of any such action.
17. FAA Sec. 666. Does the country object, on basis of race, religion, national origin or sex, to the presence of any officer or employee of the U.S. there to carry out economic development program under FAA?	No.
18. FAA Sec. 669. Has the country delivered or received nuclear reprocessing or enrichment equipment, materials or technology, without specified arrangements on safeguards, etc.?	We have no knowledge of any such delivery or receipt.
19. FAA Sec. 901. Has the country denied its citizens the right or opportunity to emigrate?	No.
2. Security Supporting Assistance Country Criteria	
a. FAA Sec. 502B. Has the country engaged in a consistent pattern of gross violations of internationally recognized	No

human rights? Is program in accordance with policy of this Section?	Yes
b. FAA Sec. 531. Is the Assistance to be furnished to a friendly country, organization, or body eligible to receive assistance?	Yes
c. FAA Sec. 609. If commodities are to be granted so that sale proceeds will accrue to the recipient country, have Special Account (counterpart) arrangements been made?	No Grant Commodities will be sold and thus no sale proceeds will be generated.

A. GENERAL CRITERIA FOR PROJECT.

1. App. Unnumbered; FAA Sec. 653(b) (a) Describe how Committees on Appropriations of Senate and House have been or will be notified concerning the project; (b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than $1 million over that figure plus 10%)?	This emergency project was not included in the FY 1973 Congressional Presentation. However, notification will be made according to standard procedures pursuant to the App. Act and FAA 653 (b).
2. FAA Sec. 611(a)(1). Prior to obligation in excess of $100,000, will there be (a) engineering, financial, and other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?	a) Yes b) Yes
3. FAA Sec. 611(a)(2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?	No further legislative action is required.
4. FAA Sec. 611(b); App. Sec. 101. If for water or water-related land resource construction, has project met the standards and criteria as per Memorandum of the President dated Sept. 5, 1973 (replaces Memorandum of May 15, 1962; see Fed. Register, Vol 38, No. 174, Part III, Sept. 10, 1973)?	This is not a water or water-related land resource construction project.
5. FAA Sec. 611(e). If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed $1 million, has Mission Director certified the country's capability effectively to maintain and utilize the project?	Yes

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6. FAA Sec. 209, 619. Is project susceptible of execution as part of regional or multilateral project? If so why is project not so executed? Information and conclusion whether assistance will encourage regional development programs. If assistance is for newly independent country, is it furnished through multilateral organizations or plans to the maximum extent appropriate?	Project forms one discrete component of a large multi-donor effort to improve Lesotho's road network. The project will have little effect re encouragement of regional development programs since its impact will be felt primarily within Lesotho.
7. FAA Sec. 601(a):(and Sec. 201(f) for development loans). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.	The project will encourage international trade by providing an improved transportation route for Lesotho exports. Also it will serve to encourage competition in provisioning south and south-east Lesotho by improving access routes from western Lesotho.
8. FAA Sec. 601(b). Information and conclusion on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).	The project will fund U.S. source construction, engineering design and supervision as well as U.S. source equipment, except where waivers allow otherwise.
9. FAA Sec. 612(b); Sec. 636(h). Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized to meet the cost of contractual and other services.	GOL will contribute approximately 17.7 percent of project costs.
10. FAA Sec. 612(d). Does the U.S. own excess foreign currency and, if so, what arrangements have been made for its release?	Not an excess foreign currency country.

A. Procurement

1. FAA Sec. 602. Are there arrangements to permit U.S. small business to participate equitably in the furnishing of goods and services financed?	Standard AID procedures will be utilized to assure this occurs.
2. FAA Sec. 604(a). Will all commodity procurement financed be from the U.S. except as otherwise determined by the President or under delegation from him?	Except items for which waivers have been requested commodity procurement will be from Code 941 (but primarily U.S.) sources.
3. FAA Sec. 604(d). If the cooperating country discriminates against U.S. marine insurance companies, will agreement require that marine insurance be placed in the U.S. on commodities financed?	No such discrimination.
4. FAA Sec. 604(e). If offshore procurement of agricultural commodity or product is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity?	No such procurement.
5. FAA Sec. 608(a). Will U.S. Government excess personal property be utilized wherever practicable in lieu of the procurement of new items?	Standard A.I.D. rules will govern.
6. MMA Sec. 901(b). (a) Compliance with requirement that at least 50 per centum of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed shall be transported on privately owned U.S.-flag commercial vessels to the extent that such vessels are available at fair and reasonable rates.	The project agreement and contracts will so provide.
7. FAA Sec. 621. If technical assistance is financed, will such assistance be furnished to the fullest extent practicable as goods and professional and other services from private enterprise on a contract basis? If the facilities of other Federal agencies will be utilized, are they particularly suitable, not competitive with private enterprise, and made available without undue interference with domestic programs?	Design and supervision services will be solicited on a competitive basis primarily from U.S. firms.

3. International Air Transport. Fair Competitive Practices Act. 1974 — Yes.

If air transportation of persons or property is financed on grant basis, will provision be made that U.S.-flag carriers will be utilized to the extent such service is available?

Construction

1. FAA Sec. 601(d). If a capital (e.g., construction) project, are engineering and professional services of U.S. firms and their affiliates to be used to the maximum extent practicable? — Yes

C. Other Restrictions

1. FAA Sec. 201(d). If development loan, is interest rate at least 2% per annum during grace period and at least 3% per annum thereafter? — Not applicable.

2. FAA Sec. 301(d). If fund is established solely by U.S. contributions and administered by an international organization, does Comptroller General have audit rights? — Not applicable.

3. FAA Sec. 620(h). Do arrangements preclude promoting or assisting the foreign aid projects or activities of Communist-Bloc countries, contrary to the best interests of the U.S.? — Yes, the project agreement will so provide.

4. FAA Sec. 636(i). Is financing not permitted to be used, without waiver, for purchase, long-term lease, or exchange of motor vehicle manufactured outside the U.S. or guaranty of such transaction? — A waiver to allow procurement of non-U.S. vehicles is being requested.

5. Will arrangements preclude use of financing:

a. FAA Sec. 114. to pay for performance of abortions or to motivate or coerce persons to practice abortions? — Yes

b. FAA Sec. 620(g). to compensate owners for expropriated nationalized property? — Yes

c. FAA Sec. 660. to finance police training or other law enforcement assistance, except for narcotics programs?

d. FAA Sec. 662. for CIA activities?

e. App. Sec. 103. to pay pensions, etc. for military personnel?

f. App. Sec. 106. to pay U.N. assessments?

g. App. Sec. 107. to carry out provisions of FAA Sections 209(d) and 251(h)? (transfer to multilateral organization for lending).

h. App. Sec. 501. to be used for publicity or propaganda purposes within U.S. not authorized by Congress?