

*All communications should be addressed  
to the Permanent Secretary  
Telephone: LUSAKA, 252475/252458  
Telegrams: WORKS, RIDGEWAY, LUSAKA  
ZA 40290*



*In reply please quote:*

*No. ....*

REPUBLIC OF ZAMBIA

## MINISTRY OF WORKS AND SUPPLY

P.O. BOX 50236  
LUSAKA

### BENEFICIARY MINISTRY/DEPARTMENT

MINISTRY OF WORKS AND SUPPLY  
ROADS DEPARTMENT  
P.O.BOX 50003  
LUSAKA  
ZAMBIA

### TYPE OF PROJECT INTENTIONED

TRANSPORTATION INFRASTRUCTURE

### APPLICATION

FOR

DEVELOPMENT STUDY OF THE KAZUNGULA  
BRIDGE CONSTRUCTION OVER ZAMBEZI RIVER

### COMPONENTS OF CONSIDERATIONS

THE DEVELOPMENT STUDY  
OF THE KAZUNGULA BRIDGE ACROSS ZAMBEZI RIVER, TRUCK  
PARKING BAY, ACCESS ROAD AND BORDER POST FACILITIES

### SUBMISSION DATE

December 1997

## TABLE OF CONTENTS

### ITEM

- (A) **APPLICATION FOR JAPANESE GRANT AID BY ZAMBIA**
  - Construction of the Kazungula Bridge. Development Study
  - Project Digest
  - Background of Implementing Agency
  - Budget Allocation
  - Project Justification
  - Background
  - Transport Bottlenecks
  - Traffic Volume
  - Classified Traffic Count at Kazungula Turn off
  - sector Development Policy
  - Problems to be Solved In Road Sector
  - Outline Of The Project
  - Need to Improve Traffic
  - Short Term Objectives
  - Long Term Objectives
  - Prospective Beneficiaries
  - Project Priorities
  - Desirable Or Schedule Time of Commencement of project
  - Expected funding Source
  - Other Relevant Projects
- (B) **TERMS OF REFERENCE OF THE DEVELOPMENT STUDY**
  - Necessity of the Study
  - Necessity of Japanese Technical Assistance
  - Objective of the Development Study
  - Area to be Covered by the study
  - Scope of study
  - Development Study of the bridge schedule
  - Expected major output of the Development Study
  - Request of Study To Other Donor Agencies
  - Other relevant information
- (C) **Facilities And Information, Documents ,Maps etc. Related to The Study**
  - Assignment of Zambian counterparts
  - Availability of Data
  - Information on Security
- (D) **GLOBAL ISSUES- ENVIRONMENT ,WOMEN IN DEVELOPMENT**
  - Anticipated environment impact
  - Women as main beneficiaries
  - Project Components
  - Poverty Reduction
  - Any Anticipated constraints
- (E) **UNDERTAKING OF THE ZAMBIAN GOVERNMENT**
- (F) **Local Administration the project**
- (G) **GOVERNMENT OF THE REPUBLIC OF ZAMBIA COMMITMENT**
  - Location Maps
  - Organisation Chart of Implementing Agency
  - Letter from Southern Africa Development Community (SADC)

(A). APPLICATION FOR JAPANESE GRANT AID  
BY  
THE ZAMBIAN GOVERNMENT

Project Title	Development Study For Kazungula Bridge Construction Over The Zambezi River.
Applicant	The Government of The Republic of Zambia
Economic Sector	Transportation
Project Cost	US Dollar 1.2 million
Responsible Ministry	Ministry of Works and Supply
Implementing Agency	Roads Department
Other Interested Parties	It is A Joint Project With The Republic Of Botswana
Status of The Project	Southern African Development Community (SADC) Recognised Project
Present Model Of Crossing	By way of A Ferry.

# CONSTRUCTION OF THE KAZUNGULA BRIDGE ACROSS THE ZAMBEZI RIVER DEVELOPMENT STUDIES

## 1.0 PROJECT DIGEST

### 1.1 **Project Title**

The Development Studies for The Construction of The Kazungula Bridge Over The Zambezi River.

### 1.2 **Location Map**

The location maps are attached hereto.

### 1.3 Background of Implementing Agency

#### 1.3.1 **Name of Agency**

Roads Department, in the Ministry of Works and Supply.

#### 1.3.2 **Profile on Agency's Personnel**

Profession	Number
Civil Engineers	24
Mechanical Engineers	1
Material (Laboratory Engineers)	2
Road Inspectors	45
Foremen and Plant Operators	49
Clerical Officers	23
Others	35

#### 1.3.3 **Organisation Chart of Implementing Agency**

The copy of the organisation chart is attached

#### 1.3.3 **Budget Allocation**

BUDGET IN USA DOLLARS			
Main Division	Actual Allocation 1993/94	Actual Allocation 1994/95	Appropriation 1996/97
Administration	1 454 000	1 020 000	7 000 000
Construction	19 439 000	5 555 000	15 000 000
Maintenance	35 119 000	53 136 000	30 000 000
Planning & Design	5 948 000	7 700 000	11 000 000
<b>TOTAL</b>	<b>61 960 000</b>	<b>63 411 700</b>	<b>63 000 000</b>

#### **Exchange rates for**

1993/94	1 US \$ =	ZK 500
1994/95	" =	ZK 700
1995/96	" =	ZK 12000

## **1.4 Project Justification**

### **1.4.1 Background**

Zambia is a landlocked country situated at the middle of the southern part of Africa. It is surrounded by eight countries out of which three are also landlocked. To the eastern side are Malawi and Mozambique, to the North are Tanzania and Democratic Republic of Congo, to the west are Angola and Namibia and to the south are Zimbabwe and Botswana.

It is essential for Zambia to secure reliable, and cheaper transportation routes to the peripheral countries and trading ports.

The railways which used to be the major mode of both cargo and people transportation in Zambia has drastically reduce from 55% in 1995 to 40% in 1996. Instead the road transportation mode has increased to 60% during the same time.

Zambia's road network comprises of the following types of roads: International Trunk roads, Main, District, Rural, Branch and state roads. In summary there are approximately:

3 120 km of trunk roads

4 050 km of main roads

29 600 district and rural roads

Out of these about 6 480 km are paved, constituting 17%, 8300 km gravelled 23% and 21 900 km are earth roads i.e. 60%.

### **1.4.2 Transport Bottlenecks**

SADC has increased the number of member states to twelve due to admission of RSA and DRC. Also with the peace development in Angola and Mozambique, SADC is dynamically working to promoting and to activate the economies of the member states. This can only be achieved by promotion of the free and unobstructed movement of both cargoes and people within and out of the region. The region has to be made accessible from within and to and from outside. A reliable road network has been identified as the sole basis for the intended economic growth in the region. Bottlenecks as exists at Kazungula river crossing where the only civilised form of crossing is by use of ferries has been identified as such bottleneck requiring to be rectified in order to promote an obstructed and a free flow of traffic. This can only be done by construction of the bridge.

### **1.4.3 Traffic Volume**

A five years traffic volume count at Counting point NO 60 located along the Livingstone/Sesheke trunk road (to Walvis Bay in Namibia which is part of the Trans. Caprivi Highway) and situated near the Kazungula bridge shows at first a growing trend of both heavy goods vehicle and

passenger vehicles and then a drastic decline. This can only best explained as due to the worsening safety of the ferry.  
The traffic volume summary is on the table on the table below.

**CLASSIFIED TRAFFIC COUNT AT N-POINT 60  
KAZUNGULA TURN OFF.**

Year	Light Vehicles	Single Trucks	Articulated Trucks	Buses	Total ADT
1990	66	18	7	3	94
1991	76	29	28	3	136
1992	78	14	34	2	128
1993	97	27	19	6	149
1994	65	9	16	0	90
1995	55	6	18	2	81

**1.4.4 Sectorial Development Policy**

The public Investment Programme (PIP) gives higher priorities to maintenance and rehabilitation of the existing road infrastructures in Zambia. Placing importance on the road network identified by the SADC regional grouping as potentially contributing to the development of trades in the region.

The Government has further put in place through the Road Sector Investment Programme a mechanism through which a sustainable road management and maintenance will be guaranteed.

**1.5 PROBLEM TO BE SOLVED IN THE ROAD SECTOR**

There is no specific problem related to the sector itself that is identified. The difficult is the securing of funds for implementation of strategical infrastructures to enhance the regional goals.

**1.6 OUTLINE OF THE PROJECT**

For many years the only civilised form of crossing the Zambezi river at Kazungula at the Zambia/Botswana border, has been the use of ferries. It has been discovered however that the two ferries are old and have deteriorated to a point that are rendered unreliable and have become a danger to the security of the travelling public. This is seen by a series of disasters experienced in the last five years. The ferries have many times sank with the cargoes and people on board. This has not only lead to great loss of human life but also disruption of trades in the region and in particular, between the two countries. Besides, there is

the aspect of safe environment to be considered. Ferries operations are environmentally unfriendly to the aquatic life due to pollution of water by the oil spillage.

#### **1.7 Need to Improve on Traffic Flow**

The need to improve the traffic flow and cut on the travel time, improve on the travellers' safety factor, improve on the free movement of people for the purpose of promotion of the trade within the region and preservation of the environment are the major reasons why the two Governments are compelled to construct the bridge at Kazungula.

#### **1.8 SHORT TERM OBJECTIVES**

- The provision of a modern double lane bridge at Kazungula to allow free flow of traffic in both direction .
- To decrease serious traffic bottlenecks being experienced so far on an international route.
- To establish strategic national road network
- To establish strategic roads within the SADC region.
- To create larger scale employment opportunities for the local people in the corridor of the service project.
- To access the landlocked countries to the peripheral ports on the Atlantic ocean and the ports in South Africa.

#### **1.9 LONG TERM OBJECTIVE**

Through the implementation of the project will improve the road network and serious traffic bottlenecks currently being experience on the international route between Zambia and Botswana will be eliminated completely. Consequently, this project will greatly contribute not only to the two countries but to the development of economies of the entire Economic regional grouping.

##### **1.9.1 Prospective Beneficiaries**

As the bridge will form a vital link and form part of the Southern Africa Transport and Communication (SATC) road network in the SADC region, the beneficiaries are the population of the entire member states including the member countries of the Common market for East and Southern Africa (COMESA).

### **1.9.2 Project Priorities**

Zambia rates the Kazungula as one of the projects on the priority list as it connects Zambia to the southern African sea ports. It is one of the projects identified for construction under the 10 years Road Sector Investment Programme (ROADSIP).

### **1.9.3 DESIRABLE OR SCHEDULED TIME OF COMMENCEMENT OF THE PROJECT**

The development study of the Kazungula bridge should start as soon as the logistic of securing funds are done and funds are released. Preferably in the second quarter of the 1998.

### **1.9.4 Expected Funding Source And Or Assistance**

Not any other attempts have been made to secure funds for the development study of the bridge, but we have already made our 1998 project submission for a Japanese grant aid for the construction and supervision of the Kazungula bridge.

### **1.9.5 OTHER RELEVANT PROJECTS**

Only two of the projects are of similar nature these are:  
Chirundu bridge at the border with Zimbabwe which one the Japanese Government has shown willingness to fund the construction.  
Katima Mulilo bridge at the border with Namibia, this is likely to be funded by the Kreditanstalt fuer Wiederaufbau (KfW).



(B) **TERMS OF REFERENCE OF THE DEVELOPMENT STUDY  
OF THE KAZUNGULA BRIDGE**

**1.0 Necessity/ Justification Of The Study To Zambia**

The construction of the new bridge at Kazungula will require approximately 700 metres span. A large bridge of this magnitude and size naturally requires a thorough study of the project influence on the people the environment such as the current and future traffic trends the infrastructures set up such as the topographical, geotechnical surveys and meteorological conditions.

The bridge will be an important part of the SADC region road network. As such it is justifiable that a study must be carried out to sound out the economical impact the bridge will have on the trade activities of the SADC member states.

A technical study of the SADC countries in respect of the design criteria must be also carried out so as to ascertain that the bridge will satisfactorily bear the International traffic loading of today and the future.

**2.0 Necessity/Justification of The Japanese Technical Cooperations**

Over the years the Japanese Government has extended it's assistance to the basic infrastructure and basic Human needs in Zambia. This has to a very large extent alleviated poverty of the most vulnerable people of the society. Japan has most often assisted Zambia in projects that have greatly contributed to the socio-economic development of the country that has up lift the standard of living of a larger section of the people.

Most importantly, is the Japanese superiority and seemingly unexhaustive capability to handle and building extremely large bridges such as this one. It is from such back ground of technological superiority understanding that we consider very advantaged to have the Japanese Technical Co-operation to once again come to our aid for this enormous task. In the process we believe we stand to benefit greatly through professional Technological transfer, especially that we intend to assign our Engineers as counterparts to the Japanese experts. Technology transfer is encouraged in Zambia, in particular in the Roads Department as a way for a sustainable future road projects maintenance and management.

### **3.0 Objective of The Development Study.**

The objective of the proposed development study of the Kazungula Bridge are:

- (a) To determine the design criteria to satisfy International traffic loads, intr alia, that of the SADC member states.
- (b) To determine both the ground and underground conditions of the site by carrying out geotechnical studies, in order to determine the suitability of the site.
- (c) To determine the most suitable type of the bridge .
- (d) Design the bridge, with the considerations of the aesthetic value, environmentally friendly, and none obstruction of natural river navigation.
- (d) To determine and estimate the approximate cost of construction.
- (e) Study the socio-economic impact of the bridge to the people
- (f) Study the environmental impact of the bridge
- (g) Study the actual economic impact of the finished bridge to the two countries and the region as a whole.

### **4.0 Area to be covered by the study**

The SADC region is the area to be covered by the study on a wider scale, and the Kazungula bridge site for the local investigations.

### **5.0 Scope of The Study.**

The scope of the proposed developmental study are:

- (a) Determination of the development of the SADC countries trade as influenced by the construction of the bridge.
- (b) Determination of the population projections of the SADC member states
- (c) Determination of the use of the southern African ports including the Walvis Bay in Namibia through this bridge in future.
- (d) Determine future traffic demand for the bridge
- (e) Determine highway design capacity for the bridge,
- (f) Considerations affecting the type and design of the bridge.
- (g) Determination of the underground condition of the soil by carrying out the geotechnical studies
- (h) Carrying out topographical survey to determine possible site for the bridge
- (i) Considerations on alternative bridge types
- (j) Determination and recommendation of the border facilities in order to improve on border time lags.
- (k) Considerations on the bridge access road rehabilitation.
- (l) Provision of tentative designs of both the bridge, bridge access road and the border facilities requirements.

- (m) Determination of the construction cost estimates for the bridge, border facilities and the bridge access road .
- (n) Compiling of the report.

#### 6.0 Development Study Of The Bridge Schedule

Study in SADC countries	2 months
Study of the present crossing	1 month
Review of studies in Japan	1 month
Site study including geotechnical	3 months
Review of geotechnical investigations	
and production of draft report in Japan	3 months
Discussions with the Ministry in Lusaka	
and possibly Gaborone-Botswana	1 month
Final compilation of report in Japan	1 month

**Total 12 months**

#### 7.0 Expected Major Output Of The Development Study

An inception report shall be submitted within three week upon awarding of the proposed study agreement to a Consultant company

A preliminary report shall be submitted by the 5th month.

A draft final report shall be submitted by the 11th month

A final report and recommendations shall be submitted at the end of the study agreement.

#### 8.0 Request Of Study To Other Donor Agencies If Any.

No request has been made to other Donor Agencies as regards the development studies and construction and supervision of the Kazungula Bridge.

#### 9.0 Other relevant Information If Any

Request to include the funding of the two Zambian Engineers to be attached to the project developmental studies as a way of technology transfer, through on job training. The attachment will have to cover the entire study programme and to wherever deemed necessary

**(C) FACILITIES AND INFORMATION, DOCUMENTS, MAPS etc  
RELATED TO THE STUDY AVAILABILITY**

**1.0 Assignment of counterparts personnel of implementing agency  
for the study (number and qualification background)**

Two Zambian Civil Engineers with Bachelor Degrees in the specialised fields in the order of Bridge Engineer and Project Management Engineer.

**2.0 Available data, information ,documents, maps etc related to the study.**

Maps 1:50 000, records of meteorology, record of traffic trends and the hydrographs of the river are available with different relevant Ministries but could easily be obtained whenever needed.

**3.0 Information on the security conditions in the study area.**

There has never been any nasty incidence at this border with Botswana and we do not expect any in future, however, security is guaranteed by the presence of the Zambian Police Service.

**(D) GLOBAL ISSUES SUCH AS ENVIRONMENT, WOMEN IN  
DEVELOPMENT, AND POVERTY etc.,**

**1.0 Environment components (such as pollution control, water  
supply, sewage treatment environmental management, forestry,  
biodiversity) of the project ,if any.**

The bridge type and design has to permit the free navigation on the water and there will be little disturbance of the natural vegetation at the site during construction. The finished bridge will have severe negative impact on the river. Great concern and caution will have to be exercised during both the design and construction stages, so that the finished bridge and the related border facilities will have minimum severe negative effect and impact on both the river and the environment.

**2.0 Anticipated environmental impact (both natural and social) by the project if any**

There will be no negative impact caused by the bridge on the natural environment.

No severe negative social impact expected, apart from the positive stimulation of the economy due to the construction of the bridge that will be beneficial to the local community during construction and after the completion of the bridge product.

**3.0 Women as main beneficiaries or not?**

Women like the men folks compete favourably in the new economic set up of the present government. Since the women form the greater part of the business community the bridge will be more to their benefit as it will enable them easy and unobstructed movements within and outside the region.

**4.0 Project component which requires special considerations of the women if any.**

The Ministry has both male and female professionally qualified engineers who will be attached to the Development study team.

**5.0 Poverty reduction component of the project**

The project upon completion will greatly contribute to increased region trade thus contributing to the poverty reduction of the country and the region as a whole. The project will provide employment to the local people. This we believe will raise their standards of living and improve their welfare during the construction of the bridge.

**6.0 Any Anticipated constraints caused by the project to the people.**

None anticipated.

(E) **UNDERTAKING OF THE GOVERNMENT OF ZAMBIA IN ORDER TO FACILITATE THE SMOOTH AND EFFECTIVE CONDUCT OF THE STUDY.**

The Zambian Government shall take necessary measures to:

- 1.0 Secure and ensure the safety of the study team
- 2.0 Permit the members of the Japanese study team to enter, leave and sojourn in Zambia in connection with their assignment therein, and exempt them from alien registration requirements and consular fees.
- 3.0 Exempt the study team on the project from taxes, duties and any other charges on the equipment and other materials brought into and to be taken out of Zambia for the purpose of use or used at the project.
- 4.0 Exempt the study team from Income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to them, for their services in connection with the implementation of the study.
- 5.0 Provide necessary facilities to the study team for remittance as well as utilisation of funds introduced in Zambia from Japan in connection with the Development study of the bridge.
- 6.0 To secure permission or entry into the private properties or area for the purpose of conducting a study of the bridge.
- 7.0 To secure permission to allow the team to take all the data materials collected during the study and related to the project and for the purpose of further scrutiny or compilation in Japan
- 8.0 Provide medical access to the team.
- 9.0 Secure land for the purpose of the site for the bridge and the border facilities and the access road to the bridge.

(F) **LOCAL ADMINISTRATION OF THE PROJECT**


The Zambian Government shall bear claims, if any arises against members of the Japanese study team resulting from, occurring in the course of or otherwise connected with the discharge of their duties in the implementation of the study, except when such claims arise from gross negligence or wilful misconduct on the part of the member of the team.

(G) GOVERNMENT OF THE REPUBLIC OF ZAMBIA COMMITMENT

The Roads Department shall act as the Counterpart agency to the Japanese study team and also as co-ordinating body in relation with other Government Organs and Non Governmental Organisations concerned for the smooth implementation of the study.

The Government of Zambia has further assured the Japanese Government that the matters referred in this form will be ensured for a smooth conduct of the Development Study by the Japanese Study Team.

RECEIVED  
DIRECTOR  
1997  
Date 2/12/97



**J. D. Mwila,  
DIRECTOR OF ROADS  
MINISTRY OF WORKS AND SUPPLY**

On behalf of the Government of Zambia.

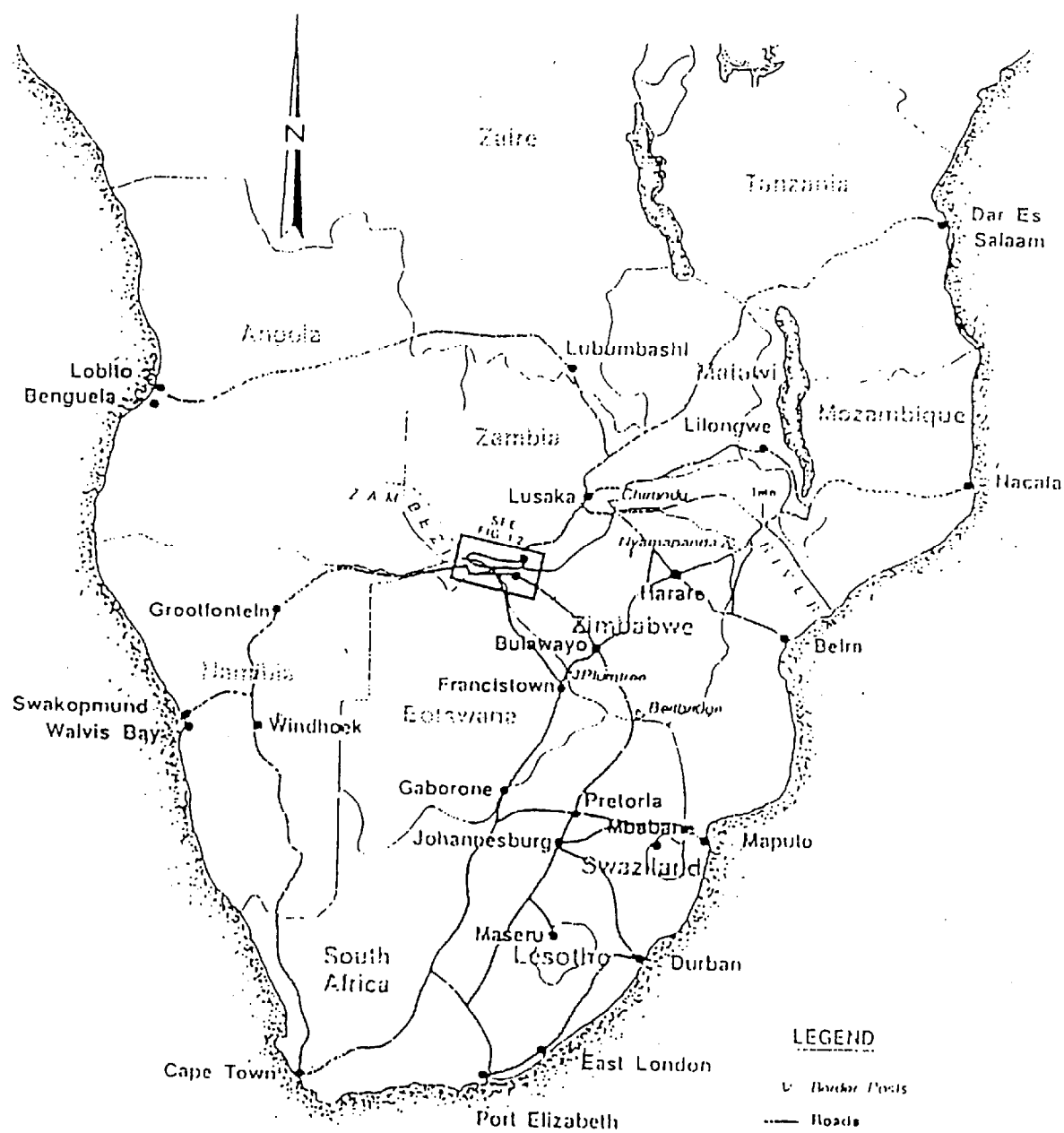


Figure 1.1

South Africa 20 1993 10 24 1993

1993 10 24 1993

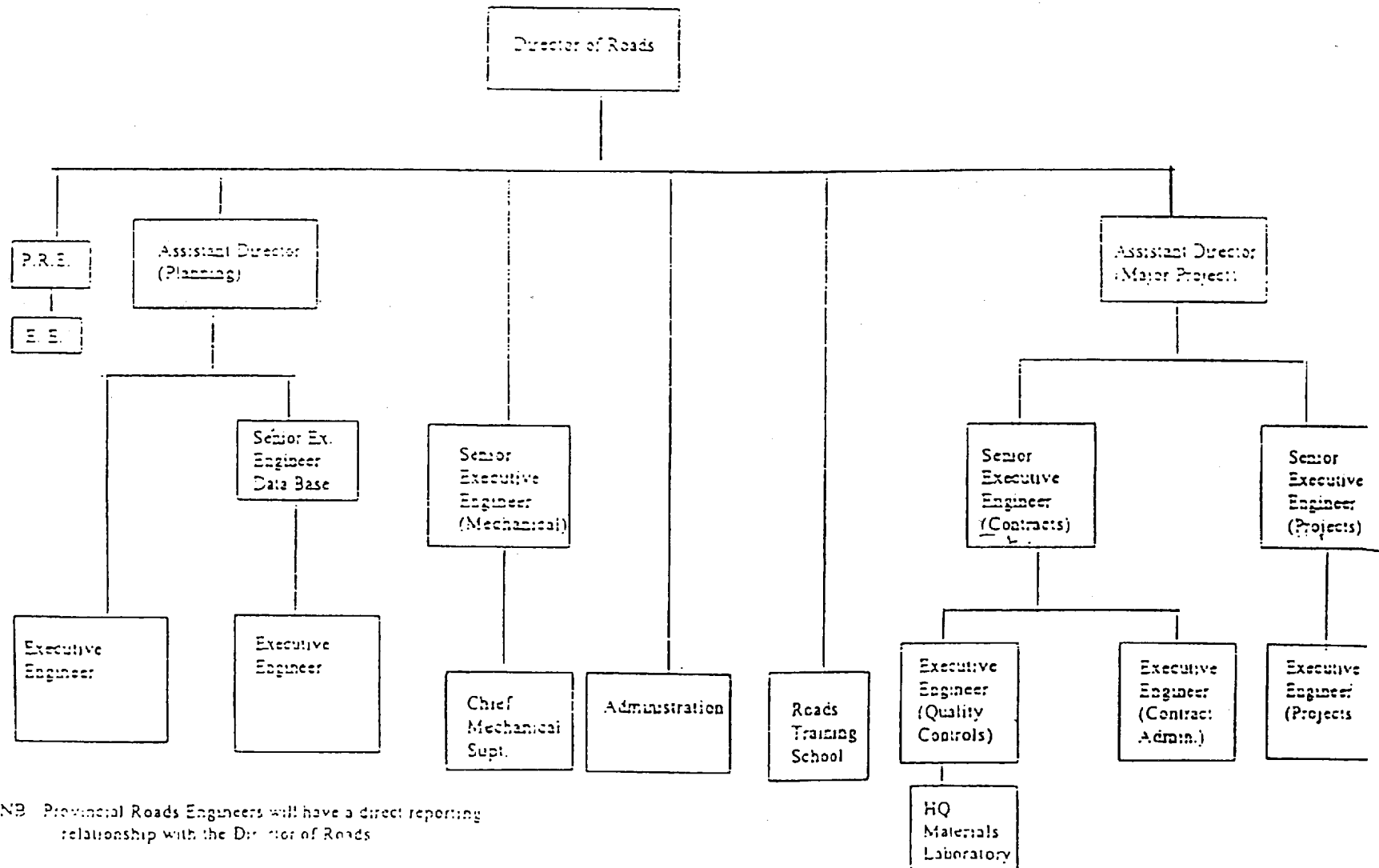


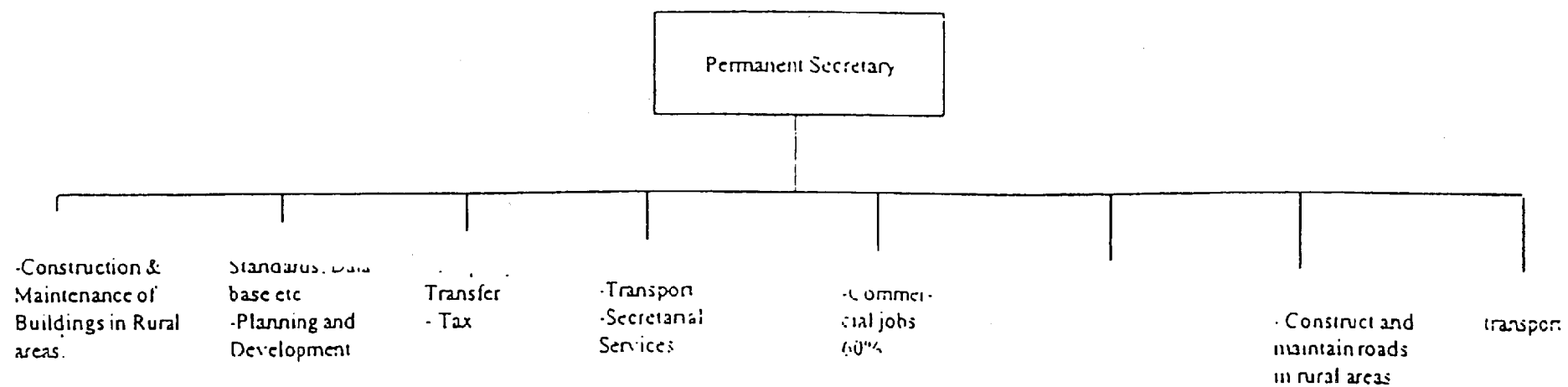


Figure 1.2

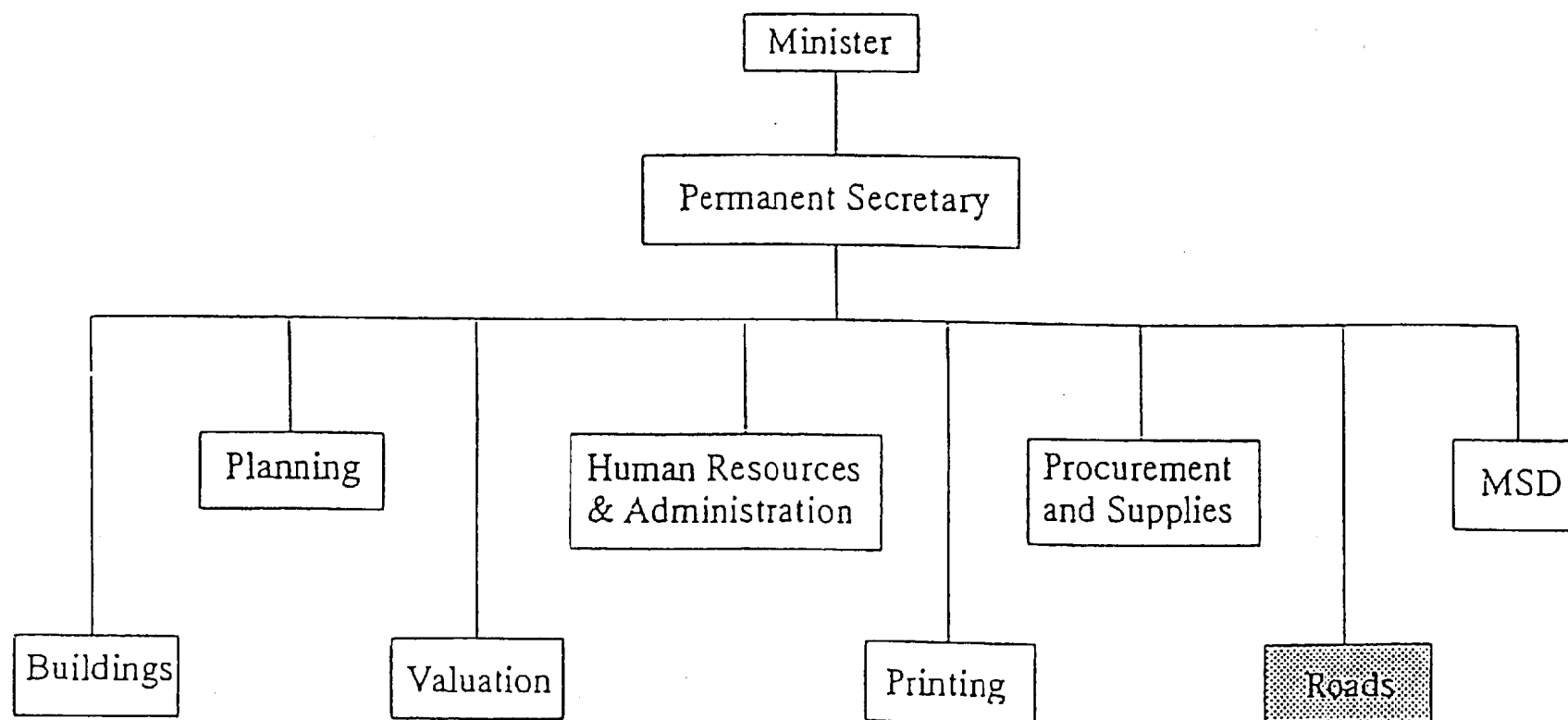


Appendix II  
Roads Department-  
Ministry of Works and Supply-  
Proposed Organizational Chart

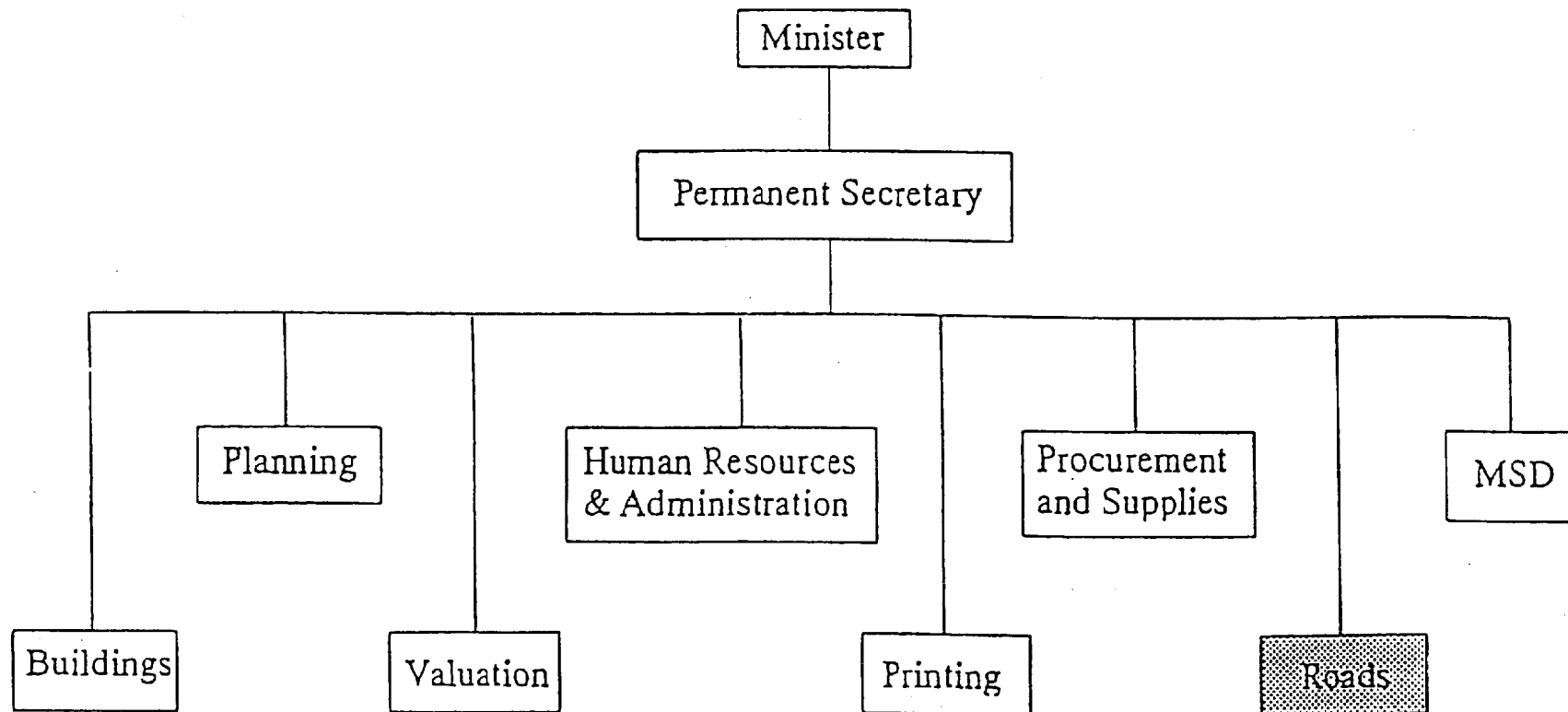




ANNEX 4 ORGANIZATION CHART MINISTRY  
OF WORKS AND SUPPLY



# ANNEX 4 ORGANIZATION CHART MINISTRY OF WORKS AND SUPPLY





SOUTHERN AFRICA TRANSPORT AND  
COMMUNICATIONS COMMISSION  
(SATCC)

SOUTHERN AFRICAN  
DEVELOPMENT COMMUNITY

CP 2877 MAPUTO  
MOZAMBIQUE

TEL: +258-1-420214/420240/427202/427177 -- FAX: 420213/431248  
TELEX: 6597 SATCC MO -- E-MAIL: DIRECTOR @ SATCC. UEM.MZ

TO: EMBASSY OF JAPAN

ATTENTION: Mr. HATAFENAKA, AMBASSADOR

FAX Num: 27 12433922 COUNTRY. R S A CITY. PRETORIA

DATE: 19/11/97 TU/F/48/97

SUBJECT: KAZUNGULA BRIDGE


EAR SIR;

The crossing of Zambezi River is one of the most important issues the SADC region given the implications to the transport system. This project has been approved by SATCC from the beginning and discussions have taken place for quite a long time. The request for the Japanese Government to finance the construction of a bridge at Kazungula and other facilities is a culmination of the referred discussions among the SADC member States in particular between Botswana and Zambia the first beneficiaries of the project.

We do support the initiative of the Governments of the Republic of Botswana and the Republic of Zambia in proposing the Japanese Government to finance the project since the ferry which has been operating since 1979 is now inefficient due to the traffic increase.

I believe that the proposed bridge will accelerate the transport system growth in the region, taking into account the fact that other member States will benefit from the project. Should you need any further clarification please don't hesitate to contact us.

Sincerely Yours:

  
E. H. Msolomba  
Director

Member States

Angola  
Botswana  
Lesotho

Malawi  
Mauritius  
Mozambique

Namibia  
South Africa  
Swaziland

Tanzania  
Zambia  
Zimbabwe