Appendices

Appendices 1. Member List of the Study Team

1-1 Primary Study in Tanzania

1. **Team Leader, Noriaki NISHIMIYA**
   Senior Assistant to the Managing Director of Office of Technical Coordination and Examination, Grant Aid Management Department, Japan International Cooperation Agency (JICA)

2. **Project Coordinator, Hidetaka SAKABE**
   Staff Member, 3rd Project Management Division, Grant Aid Management Department, Japan International Cooperation Agency (JICA)

3. **Project Manager / Road Traffic Planner, Hiroshi FUJISAWA (Nippon Koei Co, Ltd.)**
   Nippon Koei Co, Ltd. in association with Japan Engineering Consultants Co., Ltd.

4.
   Nippon Koei Co, Ltd. in association with Japan Engineering Consultants Co., Ltd.

5. **Natural Condition Survey Engineer (Topography/Geography),**
   Akira KADOYA (Japan Engineering Consultants Co., Ltd.)
   Nippon Koei Co, Ltd. in association with Japan Engineering Consultants Co., Ltd.

6. **Natural Condition Survey Engineer (Hydrology), Toshihisa NAITO (Nippon Koei Co, Ltd.)**
   Nippon Koei Co, Ltd. in association with Japan Engineering Consultants Co., Ltd.

7.
   Nippon Koei Co, Ltd. in association with Japan Engineering Consultants Co., Ltd.

1-2 Discussion on Draft Report in Tanzania

1. **Team Leader, Hiroyuki KINOMOTO**
   Deputy Resident Representative
   Tanzania Office, Japan International Cooperation Agency (JICA)

2. **Project Coordinator, Hidetaka SAKABE**
   Staff Member, 3rd Project Management Division, Grant Aid Management Department, Japan International Cooperation Agency (JICA)

3. **Project Manager / Road Traffic Planner, Hiroshi FUJISAWA (Nippon Koei Co, Ltd.)**
   Nippon Koei Co, Ltd. in association with Japan Engineering Consultants Co., Ltd.

4.
   Nippon Koei Co, Ltd. in association with Japan Engineering Consultants Co., Ltd.

Appendices 2. Study Schedule

2-1 Primary Study in Tanzania

No.	Date		Study Team Schedule	Stay	Activities
1	6/10	Sun	Sakabe, Fujisawa, Mizuno, Kadoya, Naito and Sonobe move from Tokyo to DRS	in Air	Movement
2	6/11	Mon	Sakabe, Fujisawa, Mizuno, Kadoya, Naito and Sonobe arrive at DRS	Dar es Salaam	Courtesy Call on the Embassy of Japan and JICA
3	6/12	Tue		Dar es Salaam	Courtesy Call on MOW, Submission of Inception Report
4	6/13	Wed		Dar es Salaam	Meeting at MOW, Data Collection
5	6/14	Thu	Nishimiya arrive at DRS	Dar es Salaam	Courtesy Call on JICA Inner Meeting
6	6/15	Fri	Study Team moves to Iringa	Iringa	Field Survey with DOW and Tanroads
7	6/16	Sat	Nishimiya, Sakabe, Fujisawa, Mizuno, and Sonobe moves to DRS	Dar es Salaam/Iringa	Field Survey
8	6/17	Sun		DRS/Iringa	Data Analysis, Inner Meeting/Field Survey
9	6/18	Mon		Dar es Salaam/Iringa	Data Collection, Preparation of Minutes of Discussion/Field Survey
10	6/19	Tue		Dar es Salaam/Iringa	Signing of Minutes of Discussion Report to Embassy of Japan and JICA/Field Survey
11	6/20	Wed	Nishimiya moves from DRS	DRS/Iringa	Data Collection/Field Survey
12	6/21	Thu	Sakabe moves from DRS Fujisawa, Mizuno, Sonobe move to Iringa	Iringa	Data Collection/Field Survey
13	6/22	Fri		Iringa	Field Survey
14	6/23	Sat	Study Team moves Iringa to Kitonga	Kitonga/Iringa	Data Analysis
15	6/24	Sun		Kitonga/Iringa	Traffic Survey and Field Survey
16	6/25	Mon		Kitonga/Iringa	Traffic Survey and Field Survey
17	6/26	Tue	Study Team moves Kitonga to Iringa	Iringa	Field Survey and Data Collection
18	6/27	Wed		Iringa	Field Survey and Data Collection
19	6/28	Thu		Iringa	Field Survey and Data Collection
20	6/29	Fri	Study Team moves to DRS	Dar es Salaam	Field Survey
21	6/30	Sat		Dar es Salaam	Data Analysis
22	7/1	Sun		Dar es Salaam	Data Analysis
23	7/2	Mon		Dar es Salaam	Data Collection and Data Analysis
24	7/3	Tue		Dar es Salaam	Data Collection and Data Analysis
25	7/4	Wed		Dar es Salaam	Meeting at TAZAMA pipeline, Data Collection and Analysis
26	7/5	Thu		Dar es Salaam	Data Analysis
27	7/6	Fri		Dar es Salaam	Data Analysis and
28	7/7	Sat	Study Team moves to Iringa	Kitonga/Iringa	Field Survey
29	7/8	Sun		Iringa	Field Survey
30	7/9	Mon		Iringa	Field Survey
31	7/10	Tue	Study Team moves to DRS	Dar es Salaam	Field Survey
32	7/11	Wed		Dar es Salaam	Data Collection and Preparation of Field Survey Report
33	7/12	Thu	Kadoya and Naito move to London	Dar es Salaam	Data Collection and Preparation of Field Survey Report
34	7/13	Fri	Kadoya and Naito Transit to Tokyo	Dar es Salaam	Meeting at MOW
35	7/14	Sat	Kadoya and Naito arrive at Tokyo	Dar es Salaam	Preparation of Field Survey Report
36	7/15	Sun		Dar es Salaam	Preparation of Field Survey Report
37	7/16	Mon		Dar es Salaam	Meeting at MOW Report to the Embassy of Japan and JICA
38	7/17	Tue	Study Team moves from DRS	In a plane	Movement
39	7/18	Wed	Study Team moves to Tokyo	In a plane	Movement
40	7/19	Thu	Study Team arrives at Tokyo		Movement

2-2 Discussion on Draft Report in Tanzania

No.	Date		Study Team Schedule	Stay	Activities
1	9/23	Sun	Study Team Member of Sakabe, Fujisawa and Mizuno move from Tokyo to DRS	in Plane	Movement
2	9/24	Mon	Study Team arrives at DRS	Dar es Salaam	Courtesy Call on the Embassy of Japan and JICA
3	9/25	Tue		Dar es Salaam	Discussion on Draft Report at MOW
4	9/26	Wed		Dar es Salaam	Discussion on Draft Report at MOW
5	9/27	Thu		Dar es Salaam	Discussion on Draft Report and Preparation of Minutes of Discussions
6	9/28	Fri		Dar es Salaam	Discussion on Draft Report and Preparation of Minutes of Discussions
7	9/29	Sat		Dar es Salaam	Inner Meeting, Preparation of Minutes of Discussions
8	9/30	Sun		Dar es Salaam	Inner Meeting, Preparation of Document
9	10/1	Mon	Study Team moves from DRS to Tokyo	in Plane	Signing of Minutes of Discussion Report to Embassy of Japan and JICA Movement
10	10/2	Tue	Study Team moves to Tokyo	in Plane	Movement
11	10/3	Wed	Study Team arrives at Tokyo		Movement

Appendices 3. List of Parties Concerned in the Recipient Country

MOW : Ministry of Works

Salmon Odunga	Permanent Secretary

Trunk Roads Division, MOW

Joshua L. Ngumbulu	Director, Trunk Roads
L. J. Mujjung	Assistant Director
Edwin Mujwahuzi	Project Coordinator
S.T. Rwegumisa	Sr. Design Engineer
K. Mushubila	Design Engineer
Leopold K. Lwajabe	Planning & Programming Engineer, Road Safety Unit

MOF : Ministry of Finance

Prosper J. Mbena	Commissioner for External Finance

NEMC: National Environment Management Council, Ministry of Natural Resource

Ignace Mechallo	Senior Environmental Economist

Makanbako Weighbridge, MOW

Robert Kipande	Senior Technician Civil Engineer

TANROADS:Tanzania National Roads Agency

TANROADS Iringa Regional office

Florian M. Kabaka	Acting Regional Manager
Mathew Mtigumwe	Planning Engineer
John Ngowi	Acting Truck Engineer
J. A. Mwambapa	Material Engineer
L. Temu	As. Material Engineer
A. L. L. Kadege	Assistant Administration Officer
Peter Ernest	Mechanical Engineer

TANROADS Coast Regional office

Mama Kayanda	Acting Regional Manager
Jacob A. Masawe	Senior Civil Technician

TANROADS Morogoro Regional Office

Eng. Kangolle	Rural Roads Engineer

TANLAB : TANLOADS Central Materials Laboratory

D. J. Maraki	Chief Engineer
M. O. Mataka	Senior Engineer, Pavement Section
M. Besta	Project Engineer, Pavement Section

National Bureau of Statistics

Cletus P.B.Mkai	Director General

National Bureau of Statistics Iringa

Charles I. Kadufi	Representative

TANESCO Iringa

Philip. M. K. Shigela	Regional Manager

Embassy of Japan

Sato, Keitaro	Ambassador
Egawa, Akio	Minister/Deputy
Mitsuya, Hiroshi	First Secretary
Iida, Hiroyuki	Technical Adviser, JICA Expert

JICA : Japan International Cooperation Agency Tanzania Office

Aoki, Sumio	Resident Representative

Kinomoto, Hiroyuki	Deputy Resident Representative
Suzuki, Kaoru	Assistant Resident Representative
F. M. Chilumba	Chief Programme Officer

Appendices 4. Minutes of Discussions

(1) Minutes of Discussions (July 15, 2001)

(2) Minutes of Discussions (October 1, 2001)

Minutes of Discussions
On the Basic Design Study
On the Project for Rehabilitation of TANZAM Highway
(Kitonga Gorge Section)
In the United Republic of Tanzania.

In response to a request from the Government of the United Republic of Tanzania (hereinafter referred to as "Tanzania"), the Government of Japan decided to conduct a Basic Design Study on the project for Rehabilitation of TANZAM Highway (Kitonga Gorge Section) (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to Tanzania the Basic Design Study Team (hereinafter referred to as "the Team"), which is headed by Mr. Noriaki Nishimiya, Senior Assistant to the Managing Director of Office of Technical Coordination and Examination, Grant Aid Management Department, JICA and is scheduled to stay in the country from June 11 to July 17, 2001.

The Team held discussions with the officials concerned of the Government of Tanzania and conducted a field survey at the study area.

In the course of discussions and field survey, both parties confirmed the main items described on the attached sheets. The Team will proceed to further works and prepare the Basic Design Study Report.

Dar Es Salaam, June 19, 2001

Noriaki Nishimiya
Leader
Basic Design Study Team
Japan International Cooperation Agency

S. Odunga
Permanent Secretary
Ministry of Works

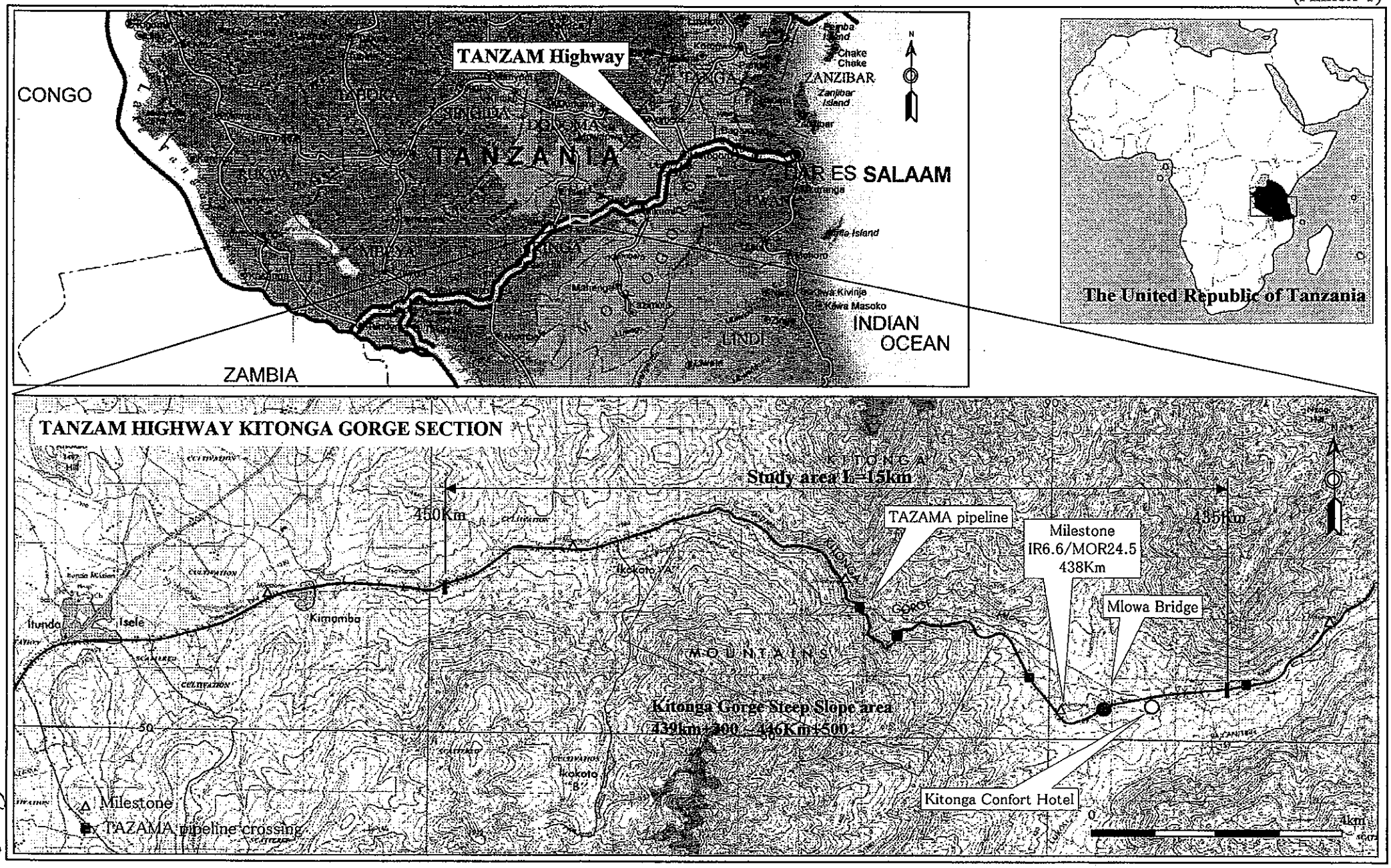
P. J. Mbena
Commissioner of External Finance
for Permanent Secretary
Ministry of Finance

7-2. The Team will show the proposed map for the land acquisition needed for the implementation of the Project in October 2001. According to the map indicating the area for the land acquisition, the Tanzanian side shall complete land acquisition and compensation for property.

7-3. Both sides confirmed that the relocation of power line and water line was not necessary, since there is no existing line under the ground.
In case that the relocation of the pipeline is necessary, it shall be implemented by the Tanzanian side (including the allocation of budget). The Team will explain the necessity of the relocation based on the result of the basic design.

7-4. Both sides confirmed that the procedures for approval of EIA (Environmental Impact Assessment) would be conducted by the Tanzanian side, if necessary.

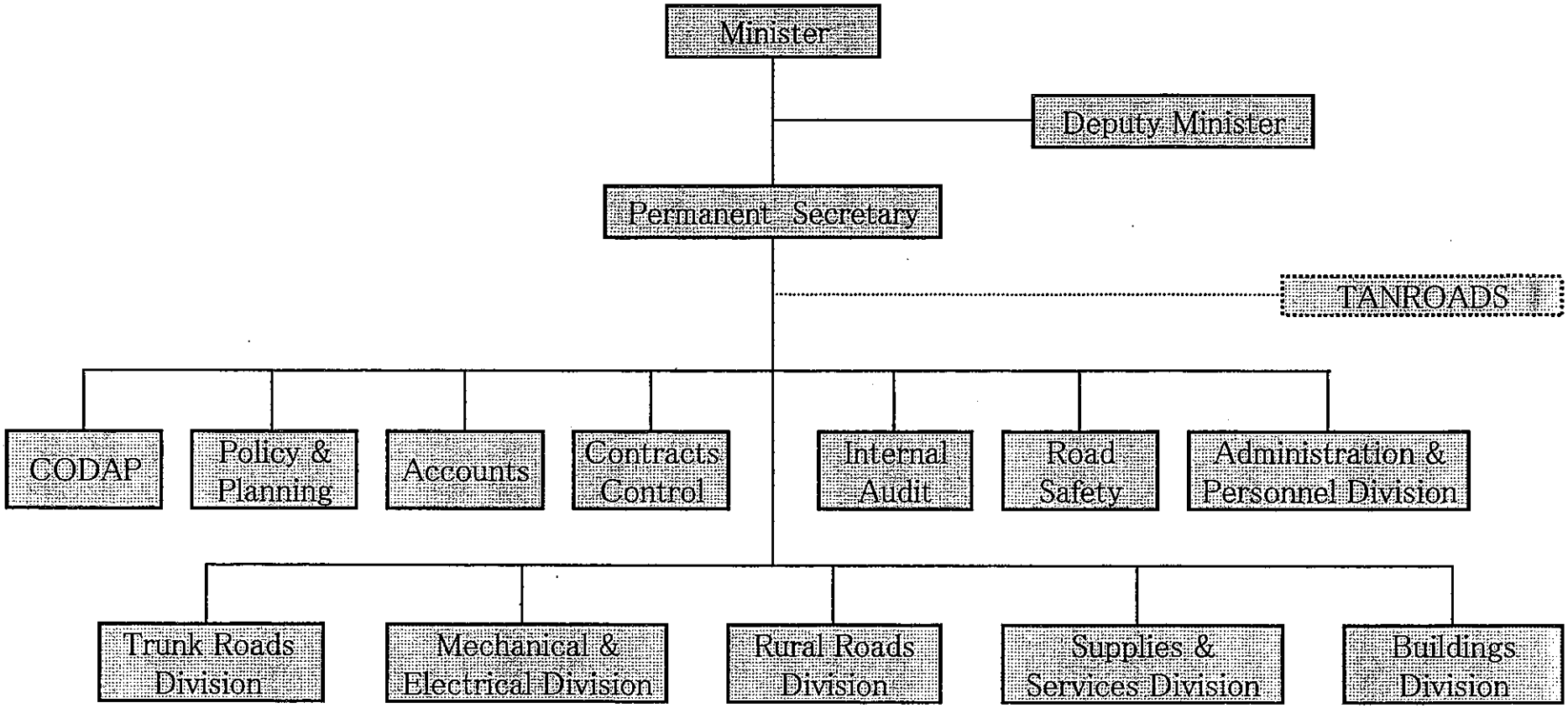
(Annex-1)



The Site of The Project

(ANNEX-2)

The Organization Chart of MOW



CODAP : Coordination Office for Donor Assisted Projects

(ANNEX-3)

JAPAN'S GRANT AID SCHEME

The Grant Aid scheme provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

1. Grant Aid Procedures

Japan's Grant Aid Scheme is executed through the following procedures.

Application	(Request made by a recipient country)
Study	(Basic Design Study conducted by JICA)
Appraisal & Approval	(Appraisal by the Government of Japan and Approval by Cabinet)
Determination of Implementation	(The Notes exchanged between the Governments of Japan and the recipient country)

Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA (Japan International Cooperation Agency) to conduct a study on the request.

Secondly, JICA conducts the study (Basic Design Study), using Japanese consulting firms.

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Scheme, based on the Basic Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes (E/N) signed by the Governments of Japan and the recipient country.

Finally, for the smooth implementation of the project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

2. Basic Design Study

1) Contents of the Study

The aim of the Basic Design Study (hereinafter referred to as "the Study"), conducted by JICA on a requested project (hereinafter referred to as "the Project"), is to provide a basic document necessary for the appraisal of the Project by the Government of Japan. The contents of the Study are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, social and economic point of view;
- Confirmation of items agreed upon by both parties concerning the basic concept of the

Project.
- Preparation of a basic design of the Project.
- Estimation of cost of the Project.

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even through they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

2) Selection of Consultants

For smooth implementation of the Study, JICA uses registered consulting firms. JICA selects firms based on proposals submitted by interested firms. The firms selected carry out a Basic Design Study and write a report, based upon terms of reference set by JICA.

The consulting firms used for the Study are recommended by JICA to the recipient country to also work on the Project's implementation after the Exchange of Notes, in order to maintain technical consistency.

3. Japan's Grant Aid Scheme

1) Exchange of Notes (E/N)

Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

2) "The period of the Grant Aid" means the one fiscal year, which the Cabinet approves the project for. Within the fiscal year, all procedure such as exchanging of the Notes, concluding contracts with consulting firms and contractors and final payment to them must be completed.

However, in case of delays in delivery, installation or construction due to unforeseen factors such as natural disaster, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

3) Under the Grant, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country.

However, the prime contractors, namely consulting, contracting and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

4) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability of Japanese taxpayers.

5) Undertakings required to the Government of the recipient country

In the implementation of the Grant Aid Project, the recipient country is required to undertake such necessary measures as the following:

a) To secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the construction,
b) To provide facilities for the distribution of electricity, water supply and drainage and other incidental facilities in and around the sites,
c) To secure buildings prior to the procurement in case the installation of the equipment,
d) To ensure all the expense and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid,
e) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the verified contracts,
f) To accord Japanese nationals, whose services may be required in connection with supply of the products and services under the Verification contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.

6) "Proper Use"

The recipient country is required to operate and maintain the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

7) "Re-export"

The products purchased under the Grant Aid should not be re-exported from the recipient country.

8) Banking Arrangement (B/A)

a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the verified contracts.
b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an Authorization to Pay (A/P) issued by the Government of recipient country or its designated authority.

9) Authorization to pay (A/P)

The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions to the Bank.

(ANNEX-4)

Major Undertakings to be Taken by Each Government

NO	Items	To be covered by Grant Aid	To be covered by Recipient side
1	To secure land		●
2	To bear the following commissions to a bank of Japan for the banking services based upon the B/A		
1) Advising Commission of A/P			●
2) Payment commission			●
3	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country		
1) Marine (Air) transportation of the products from Japan to the recipient country		●	
2) Tax exemption and customs clearance of the products at the port of disembarkation			●
3) Internal transportation from the port of disembarkation to the project site		●	
4	To accord Japanese nationals, whose services may be required in connection with the supply of the products and the services under the verified contract, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		●
5	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract		●
6	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid		●
7	To bear all the expense, other than those to be borne by the Grant Aid, necessary for construction of the facilities		●

(B/A: Banking Arrangement, A/P: Authorization to pay)

Minutes of Discussions
on the Basic Design Study on the Project for Rehabilitation of TANZAM Highway (Kitonga Gorge Section) in the United Republic of Tanzania
(EXPLANATION OF THE DRAFT REPORT)

In June 2001, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched a Basic Design Study Team on the Project for Rehabilitation of TANZAM Highway (Kitonga Gorge Section) (hereinafter referred to as "the Project") to the United Republic of Tanzania (hereinafter referred to as "Tanzania"), and through discussion, field survey, and technical examination of the results in Japan, JICA prepared a draft report of the study.

In order to explain and to consult the Government of Tanzania on the components of the draft report, JICA sent to Tanzania the Draft Report Explanation Team (hereinafter referred to as "the Team"), which is headed by Mr. Hiroyuki Kinomoto, Deputy Resident Representative of JICA Tanzania Office, from September 24th to October 1st, 2001.

As a result of discussions, both parties confirmed the main items described on the attached sheets.

Dar Es Salaam, October 1, 2001

H. Kinomoto
Leader
Basic Design Study Team
Japan International Cooperation Agency
Japan

S. Odunga
Permanent Secretary
Ministry of Works
The United Republic of Tanzania

P. J. Mbena
Commissioner of External Finance
Ministry of Finance
The United Republic of Tanzania

ATTACHMENT

1.Components of the Draft Report

The Tanzanian side agreed and accepted in principle the components of the draft report explained by the Team.

2.Japan's Grant Aid Scheme

The Tanzanian side understood the Japan's Grant Aid scheme and the necessary measures to be taken by the Government of Tanzania as had been explained by the Team and described in Annex-3 and Annex-4 of the Minutes of Discussions signed by both parties on June 19, 2001.

3.Schedule of the Study

JICA will complete the final report in accordance with the confirmed item and send it to the Government of Tanzania by February 2002.

4. Other Relevant Issues

(1) The Tanzanian side explained that the land necessary for the construction had been secured.

(2) Both sides confirmed that the MOW had take necessary measures for environment protection on the Basic Design stage based on the comments submitted by the National Environment Management Council (NEMC) dated June 18, 2001 as attached herewith.
The Tanzanian side would monitor the items necessary for environment protection hereafter by their own budget.

(3) The Tanzanian side shall ensure the tax exemption including VAT according to the procurement schedule presented by the Team, as per current laws and regulations in the Government of Tanzania.

(4) The Tanzanian side should take necessary measures for the safety and security in terms of smooth implementation of the Project.

NATIONAL ENVIRONMENT MANAGEMENT COUNCIL

BARAZA LA TAIFA LA HIFADHI NA USIMAMIZI WA MAZINGIRA

Telegrams: MAZINGIRA DAR ES SALAAM
E-Mail address: nemc@simbanet.net
nemc@nemctz.org
Phone: 255 (051) 121334
0811 - 608930/323210
Fax: 255 (051) 121334

P.O. BOX 63154
DAR ES SALAAM
TANZANIA

In reply please quote

Ref: ~~NEMC/329/1/Vol.I/16~~

Date: ~~18/6/2001~~

DIRECTOR OF TRUNK ROADS
P. O. Box 9423
20 JUN 2001
DAR ES SALAAM
MINISTRY OF WORKS

Permanent Secretary
Ministry of Works
P.O. Box 6354
Dar es Salaam

RE: BASIC DESIGN FOR REHABILITATION OF TANZAM HIGHWAY (KITONGA GORGE SECTION)

Reference is made to the subject matter above.

Following our participation in the initial survey of the project area, we wish to provide our expert advice while the project is in its initial stages.

You are thus advised while preparing Basic Design Study to take into account pertinent issues and concerns outlined below:-

1. Technical inputs from geologists are required regarding geological formation of the area and future impacts with respect to disturbance of (rocky escarpment).

2. During the survey it was noted that the TANESCO transmission line crosses in some parts in the escarpment (Thus TANESCO regulations have to be consulted).

3. Environmentally sound disposal of the sub base material to be removed should be planned.

4. Tanzam Pipeline intersects the road in three places. This issue needs collaboration with Tanzam Management and relevant technical expertise needed in view of the undertaking in question.

5. Socio-economic concerns including compensation matters should be taken into account while identifying the borrow-pit area and location of the campsite.

6. Health aspects should be given consideration.

7. The undertaking will possibly involve blasting operations, thus mitigations measure for pollution to be caused should be designed (noise, air, and at times water).

8. Erosion control measures should be designed from the early stages of the basic design given the uniqueness of the undertaking.

9. Conservation of the vegetation should be taken into account, as it is significant with respect to erosion control measures.

10. Consult relevant documents for Tanzania e.g. Environmental Policy; Tanzania EIA Procedure and Guidelines; Mining Act; Village Land Act 1999; TANESCO Operational Regulations; Ministry of Works Regulations while preparing the basic design.

In case you need more information or clarification do not hesitate to contact us.

Thank you for continued co-operation

Yours Sincerely,

Dr. M.A.K. Ngoile
Director General

Appendices 5. Cost Estimation Borne by the Recipient Country

(1) Relocation Costs

Estimation of relocation costs is below.

Item	Unit	Quantity	Cost (Unit: 000 Tshs)
Rerouting of Water Supply Lines	m	Not applicable	-
Rerouting of Power Lines	m	Not applicable	-
Rerouting of Telephone Lines	m	Not applicable	-
Replacement of TAZAMA Pipe Line's Facilities	L.S.	Non	-
Relocation of House at Temporary Camp Yard and Plant Yard	m^2	Not sure	-

(2) Maintenance Costs

The unit cost of maintenance and annual quantity required for road maintenance is estimated below.

Maintenance	Description	Unit Cost (Tshs/)	Quantity	Cost (Tshs)
AC Pavement	Pot hole patching	13,100* m2	35	459,000
	Sealing crack	2,000* m		
Concrete Pavement	Injection at space of joint	5,000 m		
	Sealing crack	5,000 m		
Repair of Road	Shoulder slope and remove rolling stone	5,500* m2		
Routine Cleaning Work	Desilt drains	2,500* m3		
	Grass cutting	10* m2	20,000	200,000

* source :Maintenance work action plans FY2001/2002, TANROADS Iringa

6. Other Relevant Data

6 - 1 RESULT OF ROAD INVENTORY

6 - 2 RESULT OF ASPHALT PAVEMENT RATING (PSI)

6 - 3 RESULT OF TRAFFIC SURVEY

6 - 4 RESULT OF TRAFFIC SPEED SURVEY

6 - 5 RESULT OF INTERVIEW SURVEY

6 - 6 RESULT OF DCP TEST

RESULT OF ROAD INVENTORY (1/2)

K.P. (km)			435〜436										436〜437										437〜438										438〜439									
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Road Width	Carriageway (m)		7.0	7.2	6.8	7.1	6.9	7.5	8.0	7.5	7.9	7.3	6.6	8.3	6.7	6.9	6.0	5.2	7.2	7.1	7.1	7.1	6.5	6.8	7.0	7.1	7.0	7.1	6.9	6.9	7.0	6.7	6.9	6.9	7.4	6.5	7.5	7.3	6.8	6.7	6.6	7.1
Condition	CBR (%)		6																																							
Drainage	Side Ditch	V-shape Left																																								
		V-shape Size																																								
		U-shape Right																																								
		U-shape Left																																								
		L-shape Right																																								
		L-shape Size																														0.15 0.60					50 L 25 U		0.5		0.20	
		Longitudinal conduit pipe Left																																								
		Longitudinal conduit pipe Size																																								
	Inlet	Right	○		○			○○		○○		○	○			○					○○	○○		○																			
	Inlet	Left																													○	○	○		○	○						○
	Catch Pit	Left																																								
	Crossing Culvert	Kind	CP		CP			CP		CP		CP	CP			CP					CP	CP		CP							CP	CP	CP		CP	CP						BC
	Crossing Culvert	Size	1.2		0.9			1.2		2.2		0.9	2-			3.0					0.9	0.9		0.9							0.9	2-	1.8		0.9	1.8						CP
	Crossing Culvert	Kind						CP		CP			1.2								CP	CP										1.2										
	Crossing Culvert	Size						0.9		1.2											0.9	0.9																					3.0
	Outlet	Right																													○	○	○		○	○						○
	Outlet	Left	○		○			○○		○○		○	○			○					○○	○○		○																			
Other Structure	Flush-kerb	Left																																								
	Flush-kerb	Size																																								
	Retaining Wall	Right																																								
	Retaining Wall	Size																																								
	Bridge	Length																																								
	Bridge	Kind																																								
	Electric Pole	Left																																								
	Tazama Pipe Line	Right																																							AB	
	Tazama Pipe Line	Cross																																							SP	
	Tazama Pipe Line	Left																																							AB	

K.P. (km)			439〜440										440〜441										441〜442										442〜443									
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Road Width	Carriageway (m)		6.9	6.8	7.1	7.2	6.9	7.0	6.9	6.9	7.0	6.9	7.0	7.0	7.5	6.9	6.9	7.1	6.7	6.7	6.9	7.0	7.1	6.8	7.0	7.0	7.0	7.8	7.1	7.0	7.0	8.5	6.9	8.7	6.9	7.1	7.0	7.0	7.0	9.8	7.4	7.1
Condition	CBR (%)		6						16														17																					
Drainage	Side Ditch	V-shape Left											40										V																					
		V-shape Size																												0.30		0.75											
		U-shape Right																																										
		U-shape Left																												0.15													
		L-shape Right											80 40																			15 35											
		L-shape Size													0.15			0.45										0.15		0.45														
		Longitudinal conduit pipe Left											40																															
		Longitudinal conduit pipe Size																										SP 0.20															
	Inlet	Right																																									
	Inlet	Left		○	○										○																	○					○				○		
	Catch Pit	Left													○	○	○	○	○		○	○	○	○		○	○		○	○	○			○	○	○		○		○		○	
	Crossing Culvert	Kind		CP	CP										CP	CP	CP	CP	CP		CP	CP	CP	CP		CP	CP		CP	CP	CP	CP	CP	CP	CP	CP		CP		CP	CP	CP
	Crossing Culvert	Size		1.2	2-										1.2	0.6	0.6	0.6	0.6		0.6	0.6	0.6	0.6		0.6	0.6		0.6	0.6	1.2	1.8	0.6	0.6	0.6	3.0		0.9		0.9	1.8	0.6
	Crossing Culvert	Kind			1.2										CP			CP						CP			CP		CP													
	Crossing Culvert	Size													1.2			0.6						0.6			0.6		0.6													
	Outlet	Right		○	○										○	○	○	○	○		○	○	○	○		○	○		○	○	○	○	○	○	○	○		○		○	○	○
	Outlet	Left																																								
Other Structure	Flush-kerb	Left											40																													
	Flush-kerb	Size																												0.05												
	Retaining Wall	Right																												0.20					20 70							
	Retaining Wall	Size																												0.15					(Masonry) h=2.20							
	Bridge	Length																																								
	Bridge	Kind																																								
	Electric Pole	Left																																ST								
	Tazama Pipe Line	Right																					AB																		AB	
	Tazama Pipe Line	Cross																					SP																		SP	
	Tazama Pipe Line	Left																					AB																		AB	

Re CP: Corrugated pipe, RP: Reignforced concrete pipe, BC Box culvert SP: Steel pipe, AB: Air bend

RESULT OF ROAD INVENTORY (2/2)

K.P. (km)			443〜444										444〜445										445〜446										446〜447									
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Road Width	Carriageway (m)		7.1	7.0	7.0	7.0	7.1	7.2	6.9	7.0	7.1	7.0	7.1	7.0	7.0	7.0	7.1	7.0	7.0	7.1	7.2	7.0	7.1	7.1	7.0	7.2	7.1	7.0	7.2	7.0	7.0	7.0	7.1	7.0	7.0	7.0	7.0	6.9	7.0	7.0	7.0	7.0
Condition	CBR (%)		17																																							
Drainage	Side Ditch	V-shape	Left																																							
			Size																																							
		U-shape	Right																																							
			Left																																							
		L-shape	Right																																							
			Size																																							
		Longitudinal conduit pipe	Left																																							
			Size	SP 0.20																																							
	Inlet		Right																																							
			Left																																							
	Catch Pit		Left																																							
	Crossing Culvert		Kind	CP	CP	CP		CP	CP	CP	CP	CP	CP		CP	CP	CP		CP	BC		CP	CP	CP	CP	CP		CP		CP	CP	CP		CP	CP	CP	CP	CP	CP		CP	CP
			Size	0.6	0.6	0.6		0.6	0.6	2-	2.2	0.6	0.6		0.6	0.6	0.6		0.6	2-		0.6	0.6	0.6	0.6	0.9		0.6		1.8	0.6	0.6		0.9	0.9	0.9	0.9	0.6	0.9		0.9	0.9
			Kind	CP					CP	1.2	CP				RP2-0.6					0.9x		BC				CP																
			Size	0.6					0.6		1.2				CP1-0.9					1.2		1.2				1.2																
	Outlet		Right																																							
			Left																																							
Other Structure	Flush-kerb		Left																																							
			Size													0.05																											
	Retaining Wall		Right				80 10				60 20			20 70			0.20					40 70							30 70									70 10 50 10				
			Size	(Maonry) h=2.30						(Masonry) h=1.20				(Masonry) h=2.0				0.15			(Masonry) h=2.0-3stage							(RC) h=1.5-3.5						(RC) h=1.0-1.7							
	Bridge		Length								-3.20																															
			Kind																																							
	Electric Pole		Left																																							
	Tazama Pipe Line		Right																																							
			Cross																																							
			Left																																							

K.P. (km)			447〜448										448〜449										449〜450									
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Road Width	Carriageway (m)		6.9	6.9	6.9	7.0	7.1	7.1	7.1	7.5	6.8	6.9	6.8	6.8	6.9	6.8	6.9	7.0	6.9	7.0	6.8	6.4	6.5	6.9	7.0	7.0	7.1	6.7	6.9	7.0	6.9	6.9
Condition	CBR (%)		17																													
Drainage	Side Ditch	V-shape	Left																													
			Size																													
		U-shape	Right																													
			Left																													
		L-shape	Right																													
			Size																													
		Longitudinal conduit pipe	Left																													
			Size																													
	Inlet		Right																													
			Left		○			○	○		○			○	○		○	○	○			○	○		○				○	○		
	Catch Pit		Left																													
	Crossing Culvert		Kind		CP			CP	CP		CP			CP	CP		CP	CP	CP			CP	CP		CP				CP	CP		
			Size		3.0			0.9	2.2		0.9			2-	0.9		2-	0.9	2-			0.9	2-		0.9				1.8	0.9		
			Kind											3.0			1.2		1.2				1.2									
			Size																													
	Outlet		Right		○			○	○		○			○	○		○	○	○			○	○		○				○	○		
			Left																													
Other Structure	K-kerb		Left																													
			Size																													
	Retaining Wall		Right																													
			Size																													
	Bridge		Length																													
			Kind																													
	Electric Pole		Left																													
	Tazama Pipe Line		Right																													
			Cross																													
			Left																													

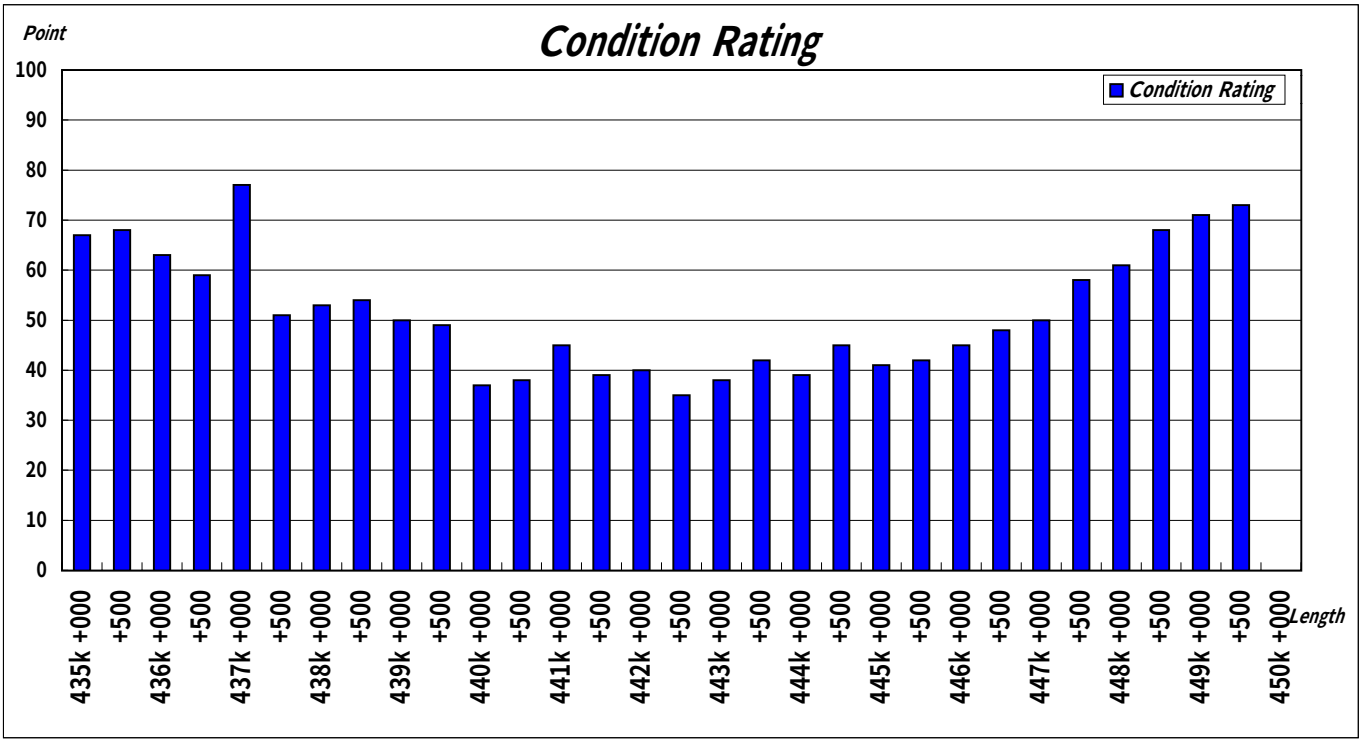
Re CP: Corrugated pipe, RP: Reignforced concrete pipe, BC Box culvert SP: Steel pipe, AB: Air bend

RESULT OF ASPHALT PAVEMENT RATING (PSI)

EET OR ROUTE : TANZAM highway LENGTH OF PROJECT : 1,500m PAVEMENT TYPE : Asphalt Concreting WIDTH : 6.5 - 7.3 m

DEFECTS	RATING	435k +000	+500	436k +000	+500	437k +000	+500	438k +000	+500	439k +000	+500	440k +000	+500	441k +000	+500	442k +000	+500	443k +000	+500
Transverse Cracks	0 - 5	1	1	1	2	1	2	2	1	1	1	1	1	1	1	1	1	1	1
Longitudinal Cracks	0 - 5	3	3	3	4	2	4	3	3	3	1	1	1	1	1	1	1	2	1
Alligator Cracks	0-10	4	4	5	6	3	7	6	6	5	3	3	2	2	2	2	2	3	2
Shrinkage Cracks	0 - 5	2	2	2	2	1	2	2	3	2	1	1	1	1	1	1	1	1	1
Rutting	0-10	3	2	2	2	1	3	2	6	6	7	9	9	8	9	8	10	9	8
Corrugations	0 - 5	1	1	1	1	1	2	2	1	1	2	3	3	2	2	3	3	3	3
Raveling	0 - 5	3	3	3	3	2	3	3	3	3	2	3	3	2	3	3	3	3	3
Shoving or Pushing	0-10	2	2	5	5	1	5	6	6	6	7	8	8	7	8	8	9	8	7
Pot Holes	0-10	3	3	5	3	1	7	6	1	5	2	3	3	1	3	1	3	0	0
Excess Asphalt	0-10	2	2	2	2	2	3	3	5	5	7	7	7	6	7	7	7	7	7
Polished Aggregate	0 - 5	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Deficient Drainage	0-10	2	2	2	2	2	4	5	3	2	3	6	6	6	6	7	7	7	7
Overall Riding Qualit	0-10	3	3	3	4	3	3	3	3	4	6	7	7	7	7	7	7	7	7
Aligment	0-10	2	2	2	3	1	2	2	3	5	7	9	9	9	9	9	9	9	9
Sum of Defects		33	32	37	41	23	49	47	46	50	51	63	62	55	61	60	65	62	58
Condition Rating		67	68	63	59	77	51	53	54	50	49	37	38	45	39	40	35	38	42

DEFECTS	RATING	444k +000	+500	445k +000	+500	446k +000	+500	447k +000	+500	448k +000	+500	449k +000	+500	450k +000
Transverse Cracks	6	1	1	2	1	1	1	1	2	2	1	1	1	
Longitudinal Cracks	0 - 5	2	2	3	3	1	3	3	4	4	3	2	2	
Alligator Cracks	0-10	3	4	4	4	2	4	4	4	5	4	3	3	
Shrinkage Cracks	0 - 5	1	2	2	1	1	1	1	2	3	2	1	1	
Rutting	0-10	8	6	7	7	7	6	5	3	3	2	2	2	
Corrugations	0 - 5	4	2	2	2	3	3	2	1	1	1	1	1	
Raveling	0 - 5	3	3	3	4	4	3	3	3	3	3	2	2	
Shoving or Pushing	0-10	8	6	6	6	6	5	5	4	5	4	4	3	
Pot Holes	0-10	1	1	1	2	2	3	4	5	1	1	2	1	
Excess Asphalt	0-10	7	6	6	5	5	4	4	3	2	2	2	2	
Polished Aggregate	0 - 5	2	2	2	2	2	2	2	2	2	2	2	2	
Deficient Drainage	0-10	6	6	6	6	6	4	4	3	3	2	2	2	
Overall Riding Qualit	0-10	6	5	6	6	6	6	5	3	3	3	3	3	
Aligment	0-10	9	9	9	9	9	7	7	3	2	2	2	2	
Sum of Defects		61	55	59	58	55	52	50	42	39	32	29	27	
Condition Rating		39	45	41	42	45	48	50	58	61	68	71	73	



RESULT OF TRAFFIC SURVEY

Date: 24, June, 2001 (Sunday) Direction: Both Side

Time	Passenger Cars		Trucks			Buses			Total	Total of evry direction	
	Passenger Car	Pick-up Truck + 4WD	2axles	3axles	4 or more axles	Mini Bus	Medium Bus over 25 pass	Large Bus over 40 pass		To Dar es	To Iringa
7:00 - 8:00	0	4	15	2	1	2	0	1	25	5	20
8:00 - 9:00	0	9	10	3	3	2	1	1	29	14	15
9:00 - 10:00	4	9	5	2	0	1	0	2	23	16	7
10:00 - 11:00	1	20	4	1	0	1	0	11	38	23	15
11:00 - 12:00	1	11	4	1	0	2	0	13	32	14	18
12:00 - 13:00	2	11	3	1	1	2	1	15	36	23	13
13:00 - 14:00	1	27	4	4	2	4	1	7	50	25	25
14:00 - 15:00	2	11	7	2	2	2	0	1	27	16	11
15:00 - 16:00	3	12	7	3	1	4	0	4	34	17	17
16:00 - 17:00	1	9	5	3	0	2	0	2	22	9	13
17:00 - 18:00	3	5	11	1	1	1	0	1	23	18	5
18:00 - 19:00	4	5	12	0	1	0	0	2	24	14	10
Sub Total	22	133	87	23	12	23	3	60	363	194	169
19:00 - 20:00	2	3	14	1	0	0	0	1	21	16	5
20:00 - 21:00	1	3	15	2	2	0	0	0	23	18	5
21:00 - 22:00	0	2	13	0	1	0	0	0	16	13	3
22:00 - 23:00	1	0	11	3	0	0	0	0	15	11	4
23:00 - 0:00	1	1	11	0	0	0	0	0	13	8	5
0:00 - 1:00	0	1	4	2	0	0	0	0	7	2	5
1:00 - 2:00	0	3	5	2	0	0	0	0	10	2	8
2:00 - 3:00	0	1	5	0	1	0	0	0	7	4	3
3:00 - 4:00	0	0	7	0	0	0	0	0	7	2	5
4:00 - 5:00	0	0	7	1	0	1	0	0	9	3	6
5:00 - 6:00	0	1	3	1	0	0	0	0	5	0	5
6:00 - 7:00	0	1	2	1	0	0	0	0	4	2	2
Sub Total	5	16	97	13	4	1	0	1	137	81	56
Grand Total	27	149	184	36	16	24	3	61	500	275	225

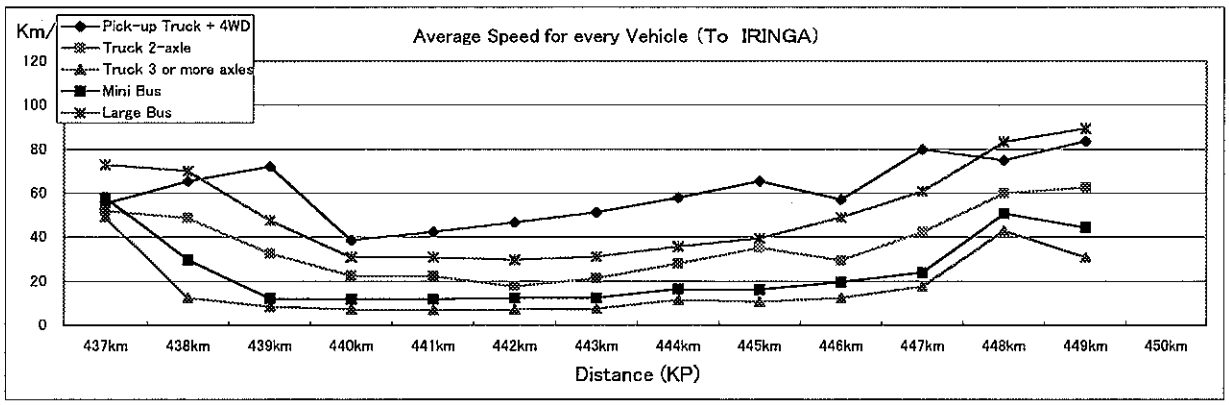
Date: 25, June, 2001 (Monday) Direction: Both Side

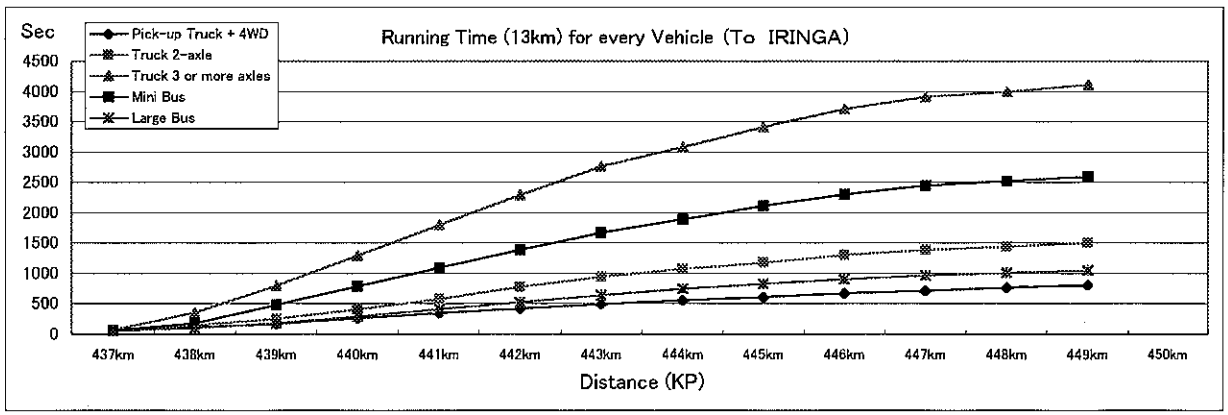
Time	Passenger Cars		Trucks			Buses			Total	Total of evry direction	
	Passenger Car	Pick-up Truck + 4WD	2axles	3axles	4 or more axles	Mini Bus	Medium Bus over 25 pass	Large Bus over 40 pass		To Dar es	To Iringa
7:00 - 8:00	1	0	5	0	0	3	1	1	11	6	5
8:00 - 9:00	0	5	4	1	3	6	0	3	22	12	10
9:00 - 10:00	1	6	2	2	1	0	0	0	12	7	5
10:00 - 11:00	0	5	2	1	0	1	0	5	14	9	5
11:00 - 12:00	0	4	3	6	0	1	0	19	33	18	15
12:00 - 13:00	1	12	3	3	0	3	1	13	36	18	18
13:00 - 14:00	1	8	4	1	0	3	1	4	22	19	3
14:00 - 15:00	2	16	5	0	1	1	1	2	28	15	13
15:00 - 16:00	0	10	4	2	0	4	1	2	23	18	5
16:00 - 17:00	2	10	10	4	0	1	1	3	31	16	15
17:00 - 18:00	1	5	6	0	0	0	0	0	12	8	4
18:00 - 19:00	0	7	9	0	0	0	0	0	16	11	5
Sub Total	9	88	57	20	5	23	6	52	260	157	103
19:00 - 20:00	0	4	10	1	1	0	0	1	17	9	8
20:00 - 21:00	0	4	13	0	1	0	1	0	19	17	2
21:00 - 22:00	1	0	21	1	3	0	0	0	26	20	6
22:00 - 23:00	0	2	14	1	0	0	0	0	17	13	4
23:00 - 0:00	0	3	14	1	0	0	0	0	18	12	6
0:00 - 1:00	0	2	14	2	1	0	0	0	19	9	10
1:00 - 2:00	0	3	21	0	0	0	0	0	24	6	18
2:00 - 3:00	0	0	19	2	0	1	0	0	22	2	20
3:00 - 4:00	0	1	17	1	2	0	0	0	21	5	16
4:00 - 5:00	0	0	8	3	0	0	0	0	11	3	8
5:00 - 6:00	0	0	6	0	2	1	0	0	9	2	7
6:00 - 7:00	0	0	9	1	2	2	0	0	14	2	12
Sub Total	1	19	166	13	12	4	1	1	217	100	117
Grand Total	10	107	223	33	17	27	7	53	477	257	220

RESULT OF TRAFFIC SPEED SURVEY (1/2)

Route TANZAM HIGHWAY **Section:** KP437 up to KP450 (Kitonga Gorge Section)
Direction To Iringa

Type of a car		Distance												
		437km	438km	439km	440km	441km	442km	443km	444km	445km	446km	447km	448km	449km	450km
Pick-up Truck + 4WD	Average Speed (km/h)	55.4	65.5	72.0	38.7	42.4	46.8	51.4	58.1	65.5	57.1	80.0	75.0	83.7	
	Average Time (sec)	65	55	50	93	85	77	70	62	55	63	45	48	43	
	Cumulative Time (sec)	65	120	170	263	348	425	495	557	612	675	720	768	811	
Truck 2-axle	Average Speed (km/h)	52.0	48.9	32.5	22.6	22.3	17.6	21.3	28.0	35.2	29.4	42.3	60.0	62.5	
	Average Time (sec)	69	74	111	160	161	204	169	128	102	122	85	60	58	
	Cumulative Time (sec)	69	143	254	414	575	779	948	1076	1178	1300	1385	1445	1503	
Truck 3 or more axles	Average Speed (km/h)	49.3	12.5	8.3	7.3	7.0	7.3	7.6	11.6	10.7	12.3	17.6	42.9	30.8	
	Average Time (sec)	73	288	434	493	514	493	474	310	336	293	205	84	117	
	Cumulative Time (sec)	73	361	795	1288	1802	2295	2769	3079	3415	3708	3913	3997	4114	
Mini Bus	Average Speed (km/h)	58.1	29.8	12.1	11.8	11.8	12.3	12.5	16.4	16.1	19.6	24.0	50.7	44.4	
	Average Time (sec)	62	121	298	305	305	293	288	220	224	184	150	71	81	
	Cumulative Time (sec)	62	183	481	786	1091	1384	1672	1892	2116	2300	2450	2521	2602	
Large Bus	Average Speed (km/h)	73.0	70.1	47.7	30.8	31.0	29.8	31.3	35.8	39.6	49.0	60.9	83.5	89.5	
	Average Time (sec)	49	51	75	117	116	121	115	100	91	73	59	43	40	
	Cumulative Time (sec)	49	100	175	292	408	529	644	744	835	908	967	1010	1050	

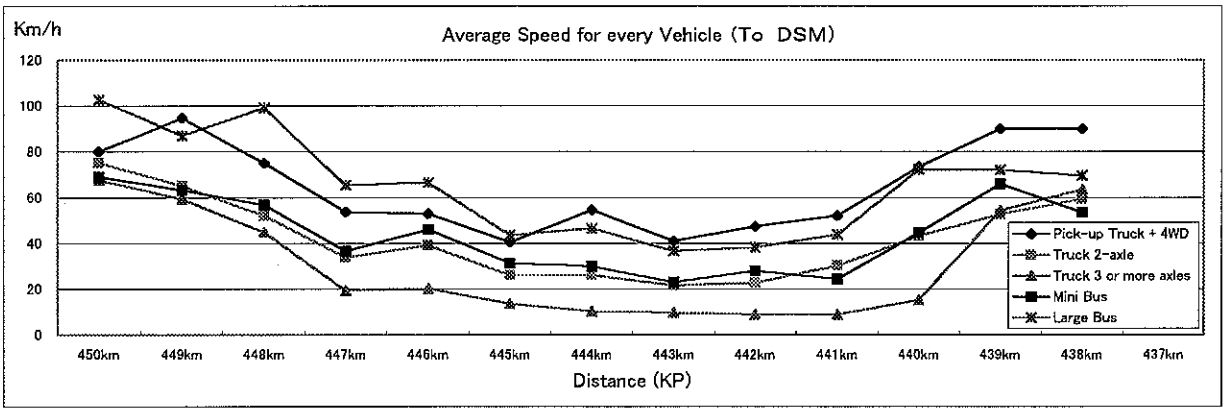


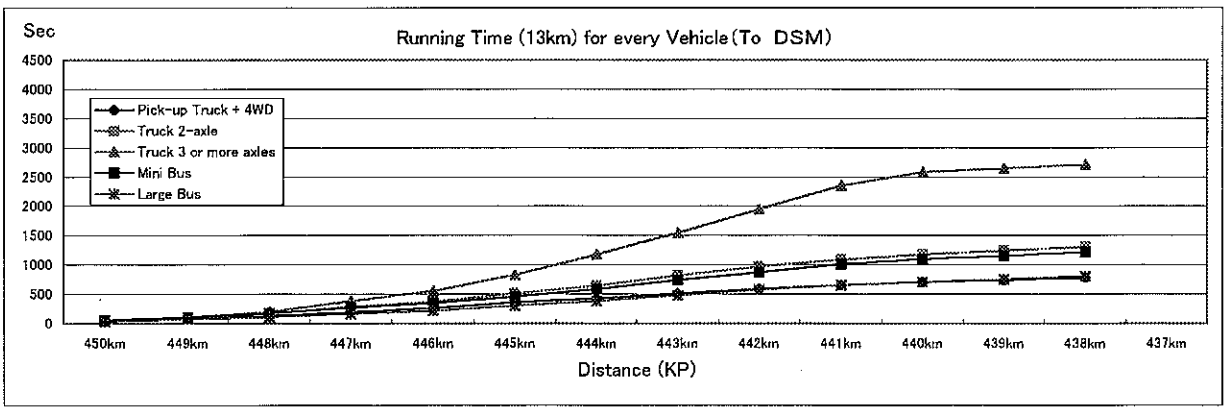


RESULT OF TRAFFIC SPEED SURVEY (2/2)

Route TANZAM HIGHWAY **Section:** KP437 up to KP450 (Kitonga Gorge Section)
Direction To Dar es Salaam

Type of a car		Distance												
		450km	449km	448km	447km	446km	445km	444km	443km	442km	441km	440km	439km	438km	437km
Pick-up Truck + 4WD	Average Speed (km/h)	80	94.7	75.0	53.7	52.9	40.4	54.5	40.9	47.4	52.2	73.5	90.0	90.0	
	Average Time (sec)	45	38	48	67	68	89	66	88	76	69	49	40	40	
	Cumulative Time (sec)	45	83	131	198	266	355	421	509	585	654	703	743	783	
Truck 2-axle	Average Speed (km/h)	75.2	65.1	52.2	33.8	39.2	26.0	26.0	21.7	22.7	30.3	43.1	52.8	59.3	
	Average Time (sec)	48	55	69	107	92	138	138	166	159	119	84	68	61	
	Cumulative Time (sec)	48	103	172	279	371	509	647	813	972	1091	1175	1243	1304	
Truck 3 or more axles	Average Speed (km/h)	67.7	59.4	44.8	19.3	20.1	13.5	10.2	9.7	9.0	8.9	15.4	54.2	63.5	
	Average Time (sec)	53	61	80	186	179	266	353	370	401	404	234	66	57	
	Cumulative Time (sec)	53	114	194	380	559	825	1178	1548	1949	2353	2587	2653	2710	
Mini Bus	Average Speed (km/h)	68.9	63.1	56.9	36.6	46.0	31.4	29.9	23.0	27.9	24.3	44.7	65.8	53.6	
	Average Time (sec)	52	57	63	98	78	115	120	157	129	148	81	55	67	
	Cumulative Time (sec)	52	109	172	270	348	463	583	740	869	1017	1098	1153	1220	
Large Bus	Average Speed (km/h)	102.9	87.0	99.2	65.3	66.6	43.4	46.6	36.5	38.4	43.8	72.3	72.1	69.6	
	Average Time (sec)	35	41	36	55	54	83	77	99	94	82	50	50	52	
	Cumulative Time (sec)	35	76	112	167	221	304	381	480	574	656	706	756	808	





RESULT OF INTERVIEW SURVEY

Interviewed Time **June 24, 2001 8:51 - 15:24**
June 25, 2001 9:31 - 15:46
Interviewed Place **In front of Kitonga Comfort Hotel**

The number of a interviewed vehicle

It gets down. (to Iringa	39
Going up (to DES)	84
Total	123

Type of interviewwd vehicle nos.

Car	6
Pick-up or 4WD	15
Mini Bus (< 25 person)	7
Med.Bus (> 25 persons)	3
Large Bus (> 40 persons)	34
2 axles	31
3 axles	22
4 axles	4

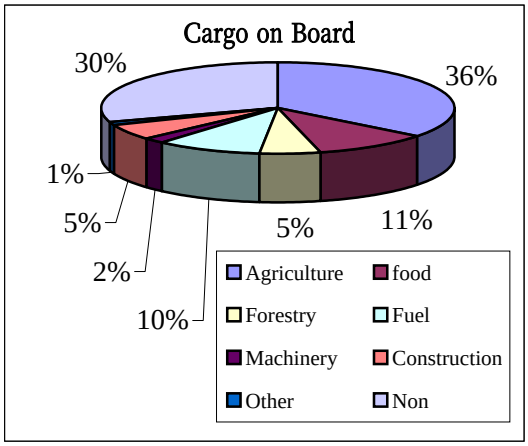
(Vehicles form uses a traffic volume survey as a base)

The rate of passengers on board (Bus)

No vacancy	40
75% full	1
50% full	2
Total	43

Cargo on board Stand

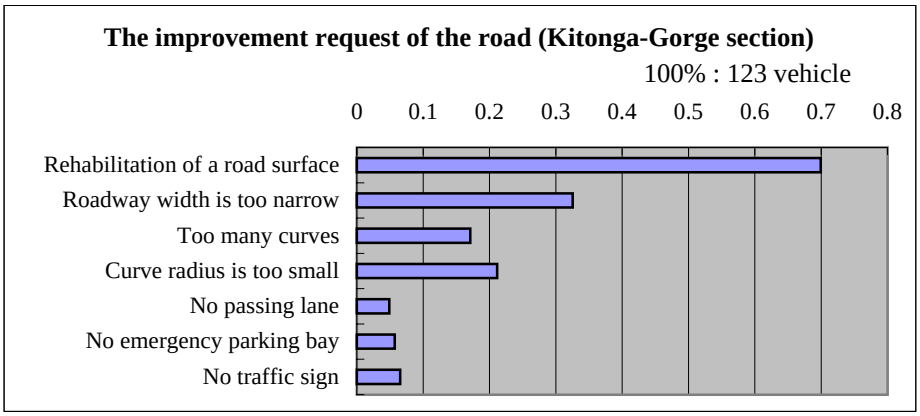
	to Iringa	to DES	Total
Agriculture	5	28	33
food	9	1	10
Forestry	2	3	5
Fuel	7	2	9
Machinery	0	2	2
Construction	4	1	5
Other	1	0	1
Non	20	8	28
Total			93



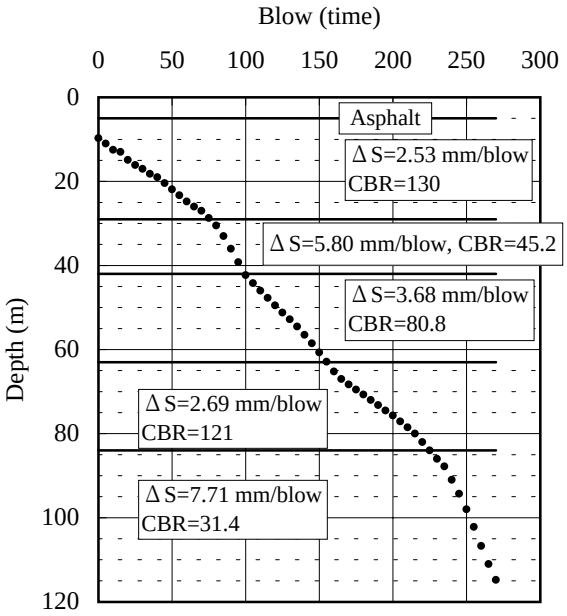
Origin city of the vehicle nos.

Dar-es-Salaam	82	34.3%
Morogoro	13	5.4%
Iringa	35	14.6%
Mbeya	43	18.0%
Songea	5	2.1%
Mombasa	2	0.8%
Malawi	4	1.7%
Lusaka	1	0.4%
Zambia	4	1.7%

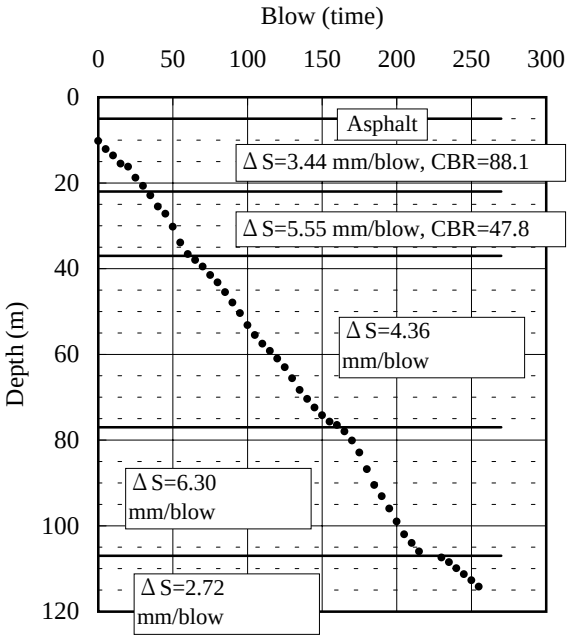
Only main cities and a foreign country are displaye



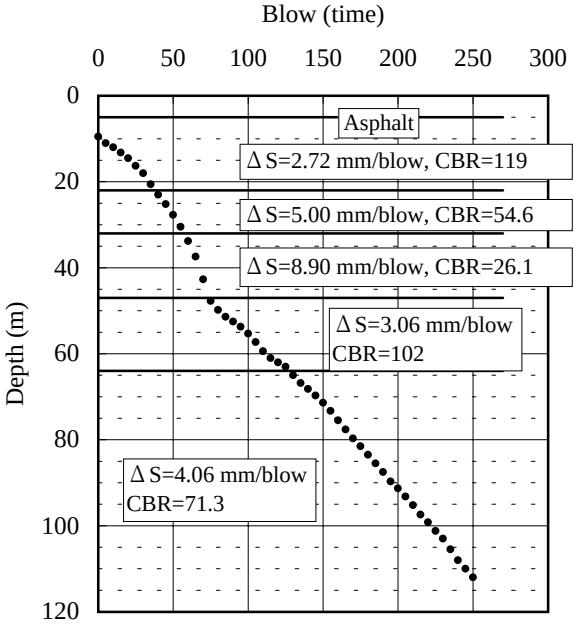
T/P-29 Sta. 449k+000 (RHS)



T/P-30 Sta. 449k+500 (RHS)

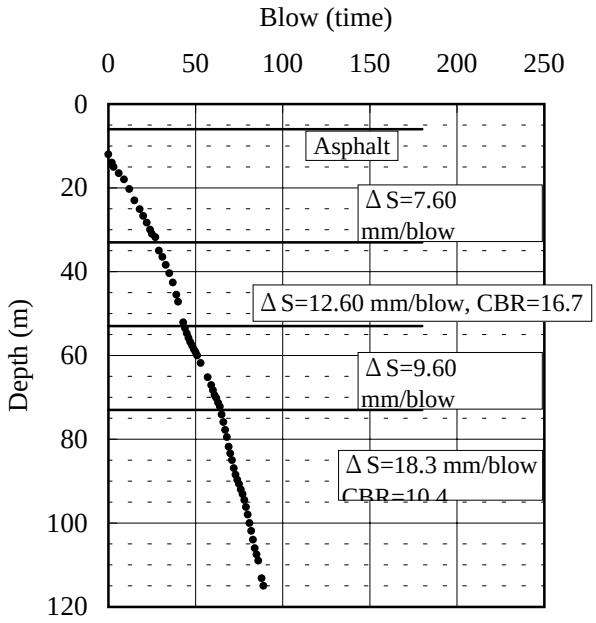


T/P-31 Sta. 450k+000 (RHS)

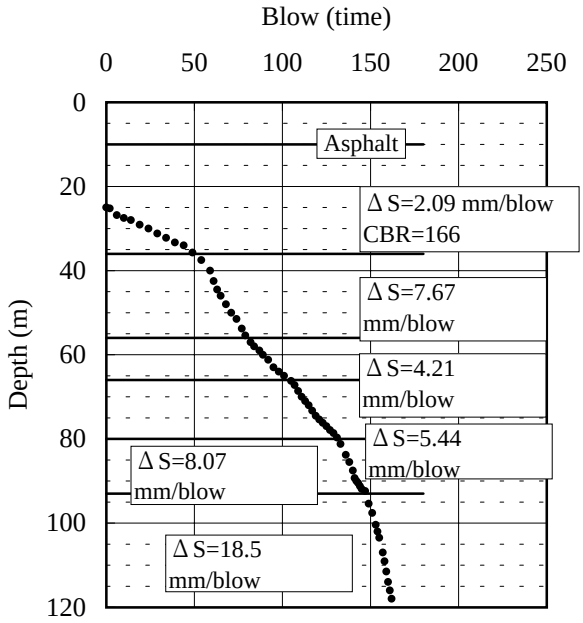


RESULT OF DCP TEST

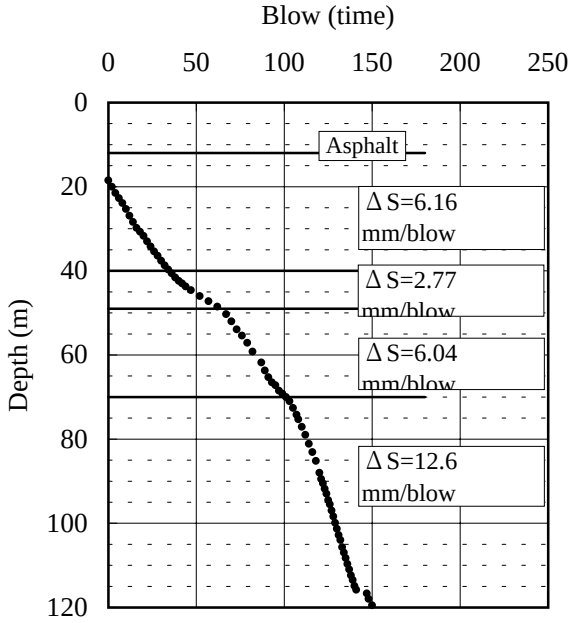
T/P-1 Sta. 435k+000 (RHS)



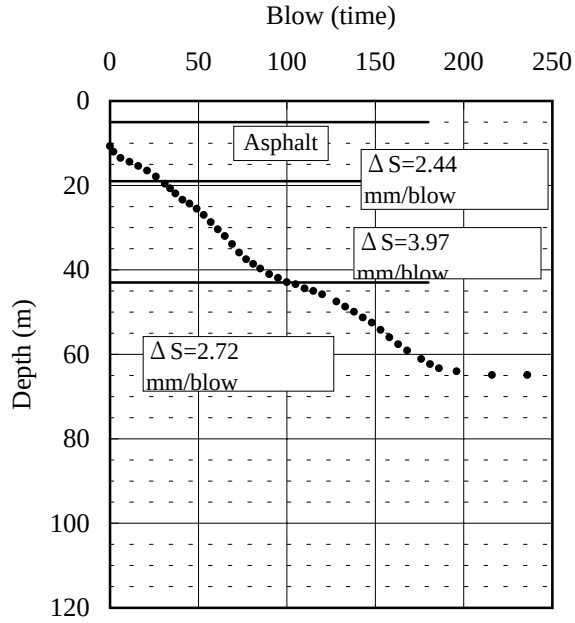
T/P-2 Sta. 435k+520 (RHS)



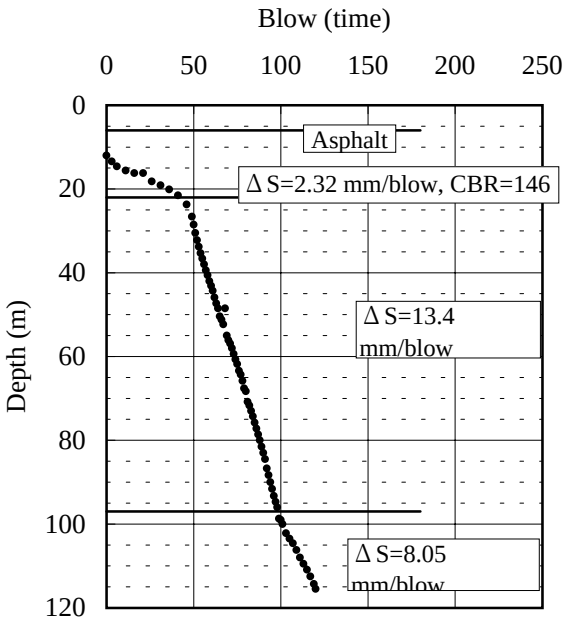
T/P-3 Sta. 436k+053 (RHS)



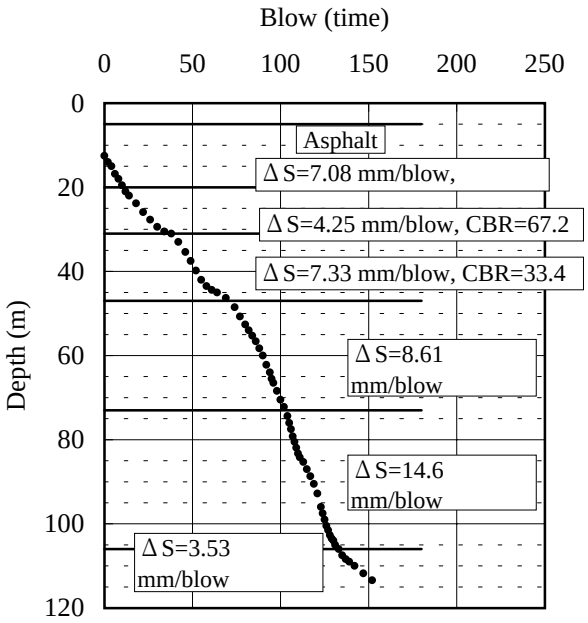
T/P-4 Sta. 436k+559 (LHS)



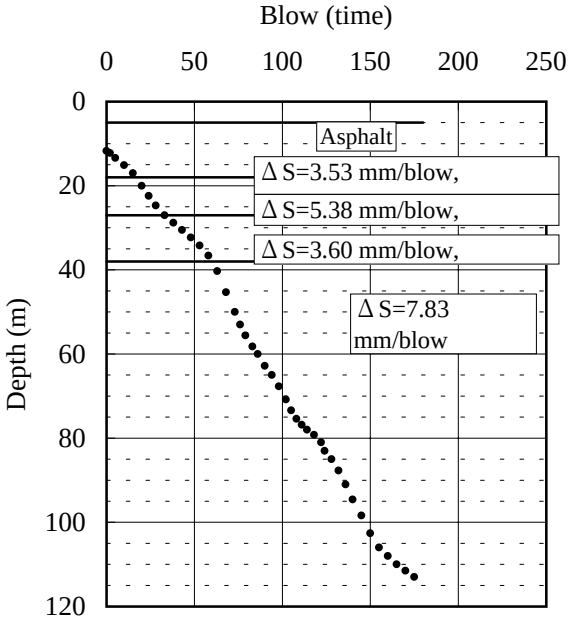
T/P-5 Sta. 436k+800 (RHS)



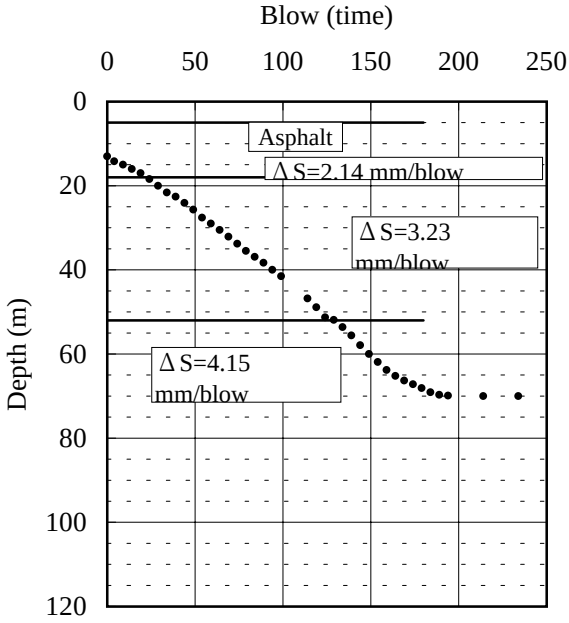
T/P-6 Sta. 437k+500 (RHS)



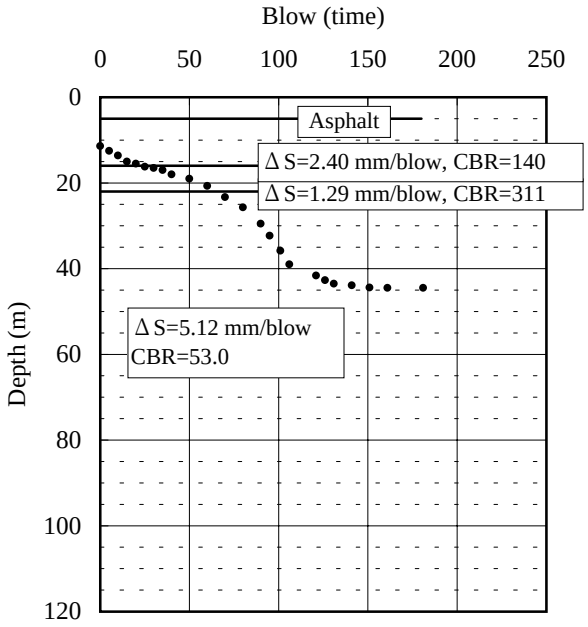
T/P-7 Sta. 438k+100 (RHS)



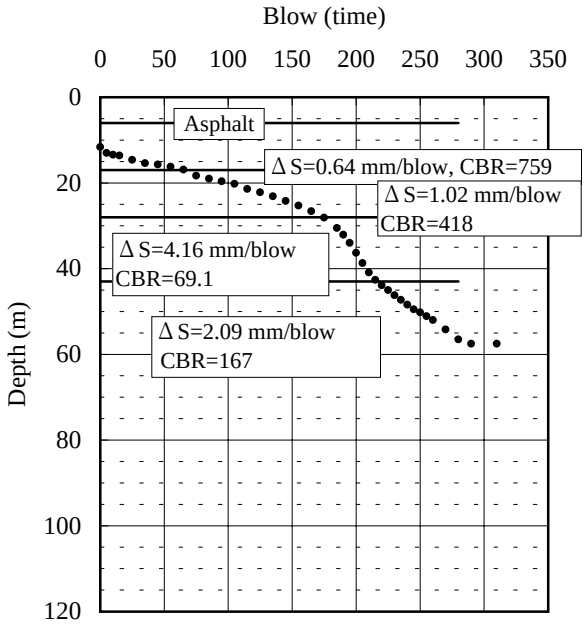
T/P-8 Sta. 438k+500 (LHS)



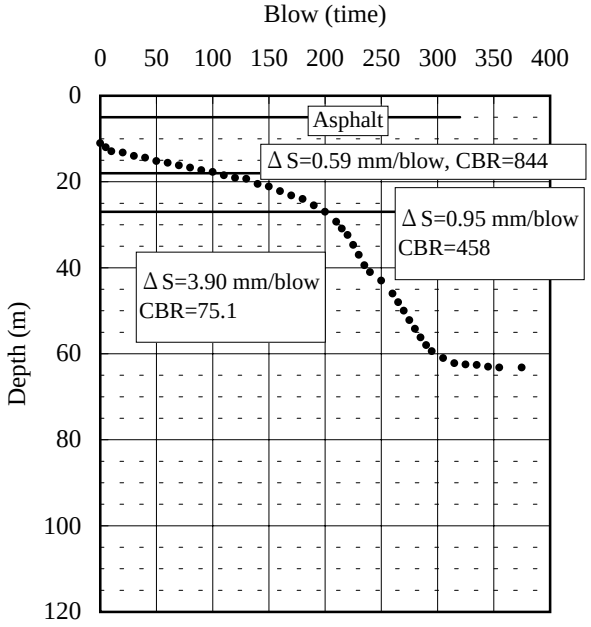
T/P-9 Sta. 439k+000 (LHS)



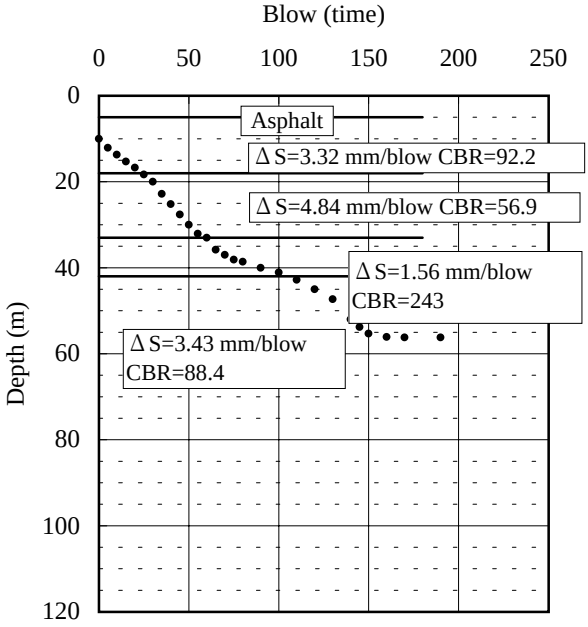
T/P-10 Sta. 439k+500 (RHS)



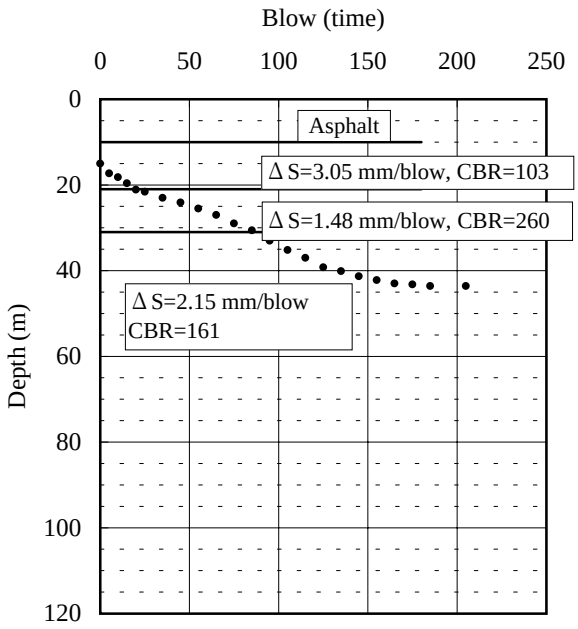
T/P-11 Sta. 440k+000 (LHS)



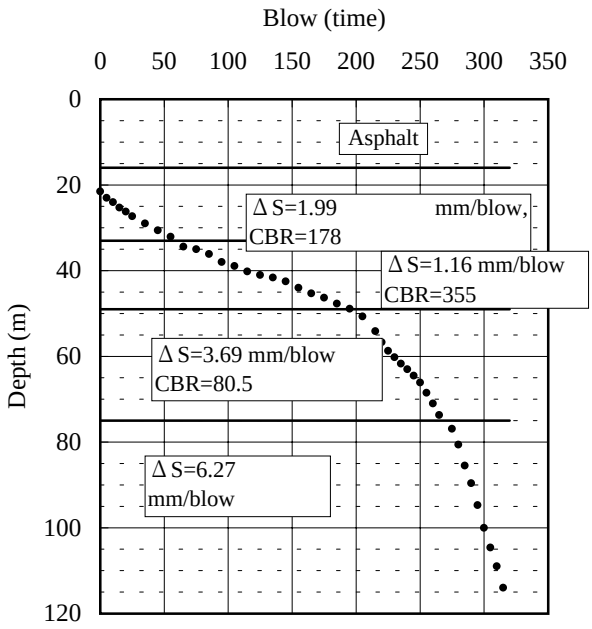
T/P-12 Sta. 440k+500 (RHS)



T/P-13 Sta. 441k+000 (LHS)



T/P-14 Sta. 441k+500 (RHS)



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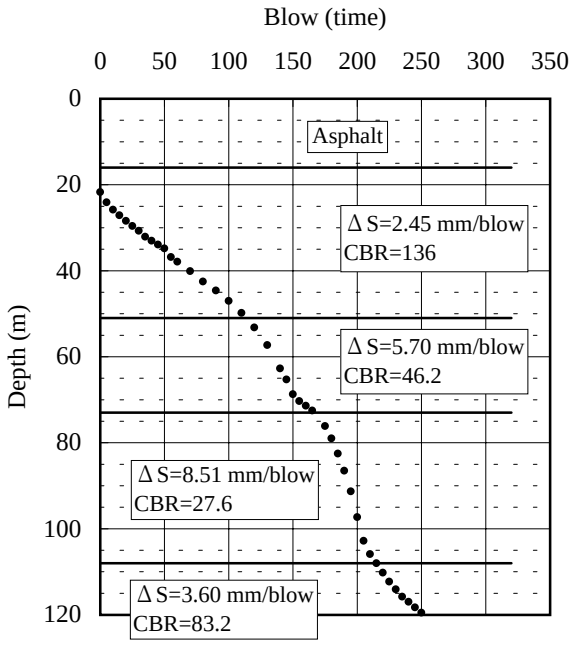

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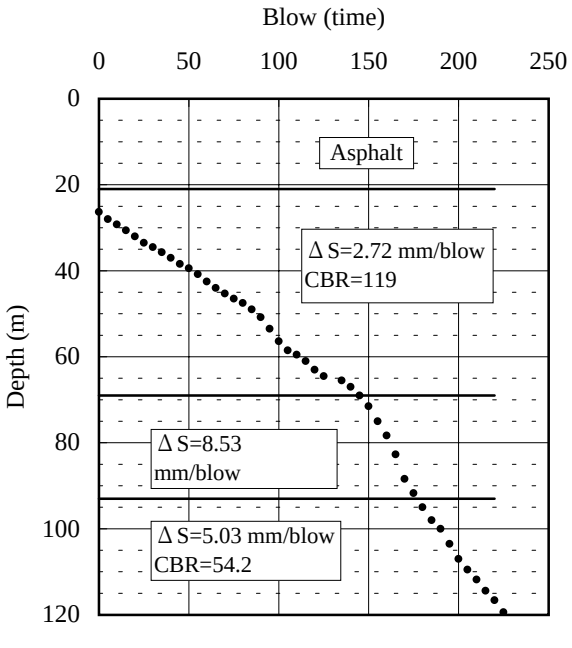
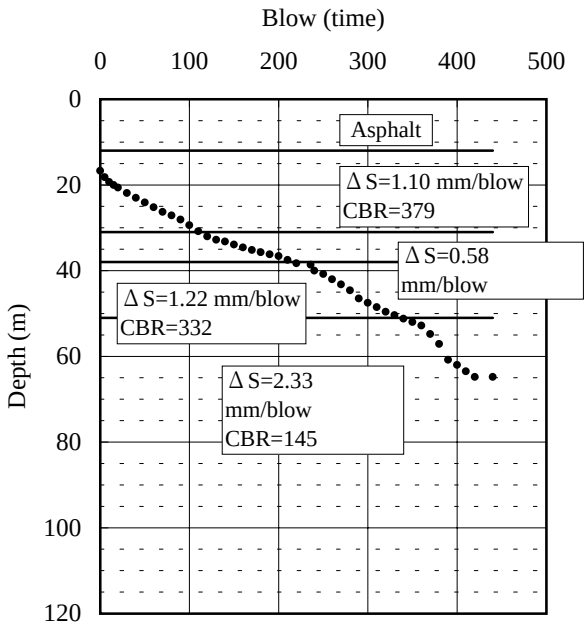
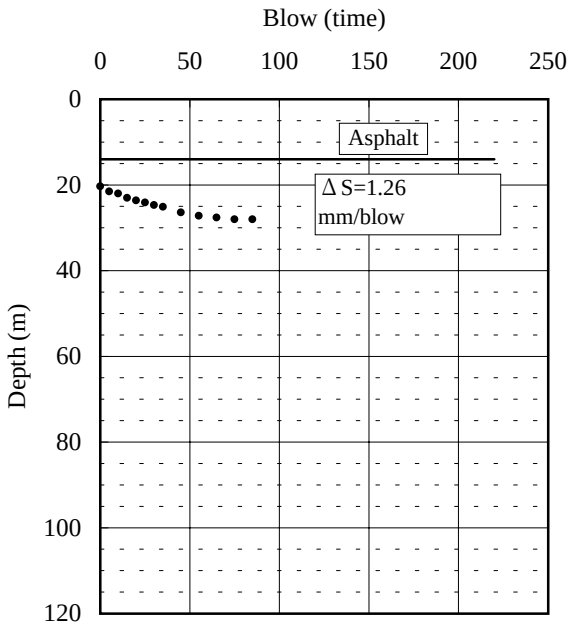


T/P-17 Sta. 443k+000 (RHS)



T/P-18 Sta. 443k+500 (RHS)



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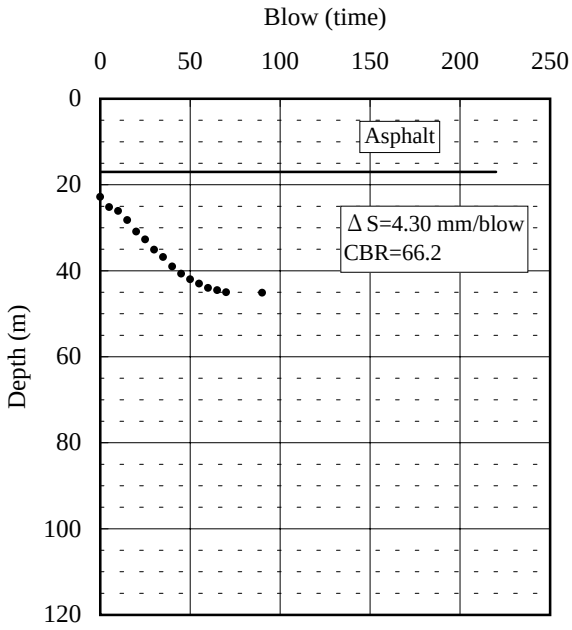

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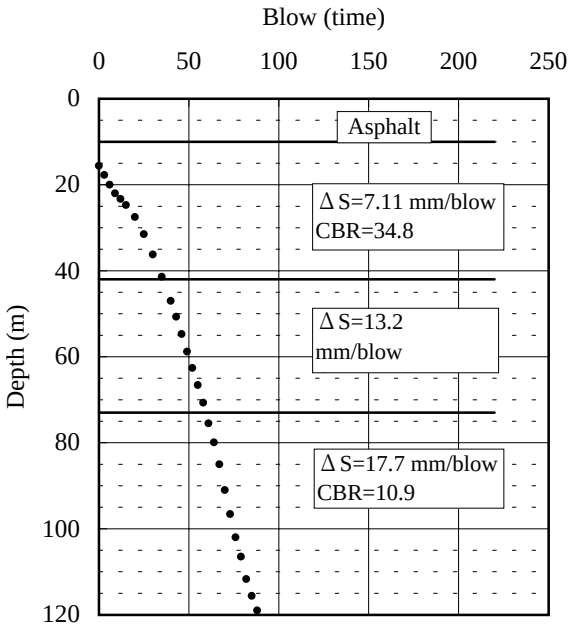

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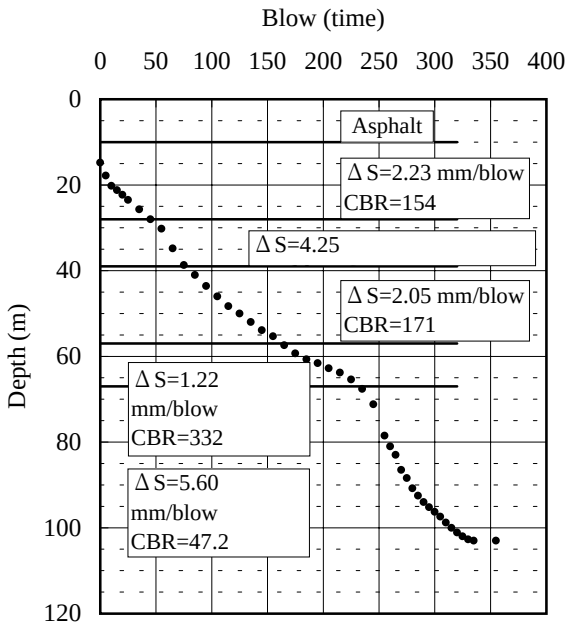

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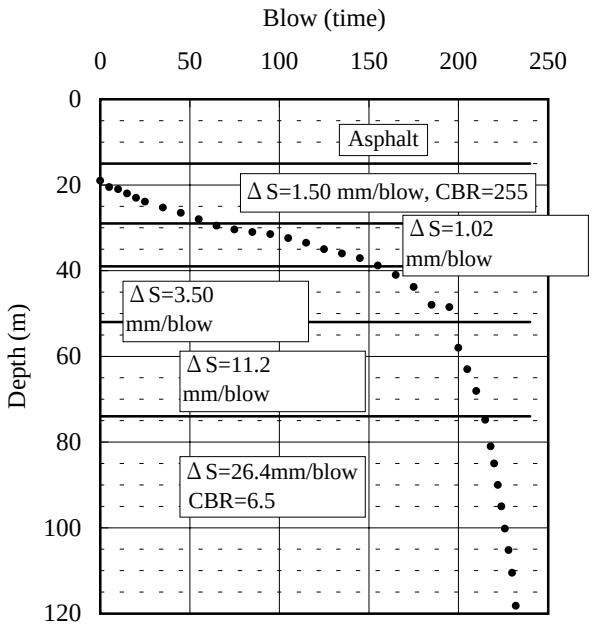

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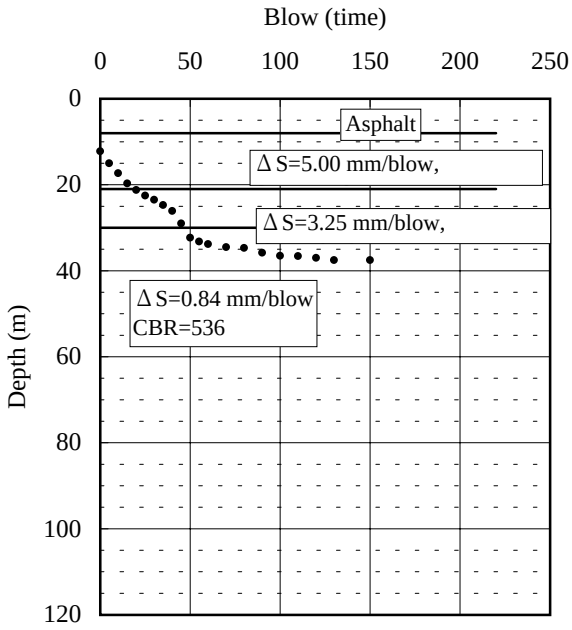

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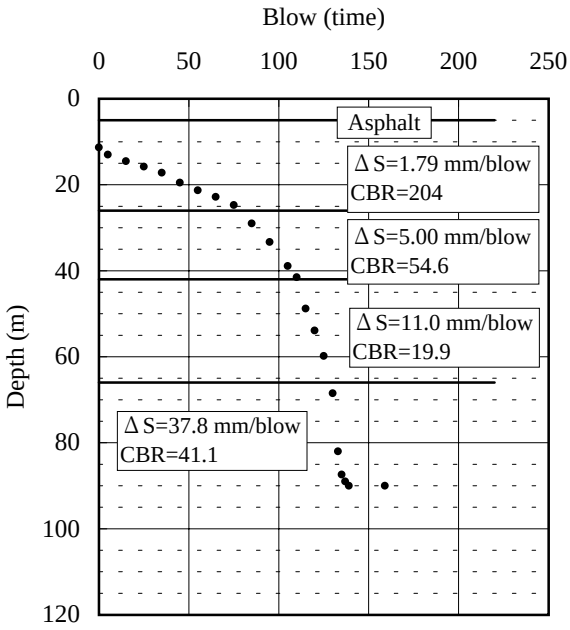

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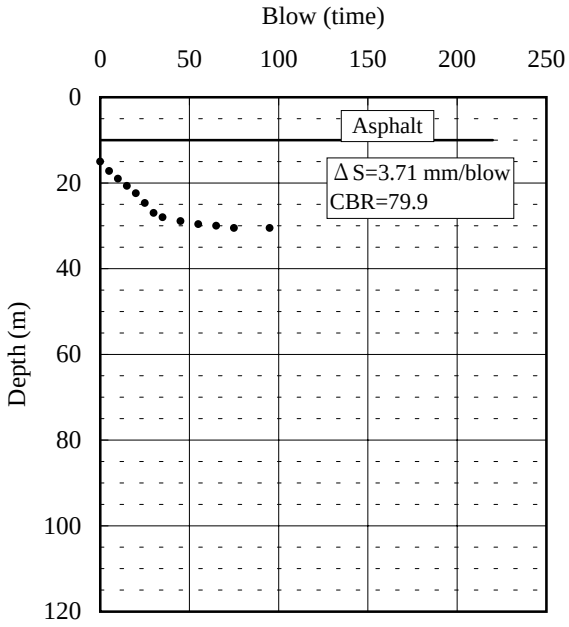
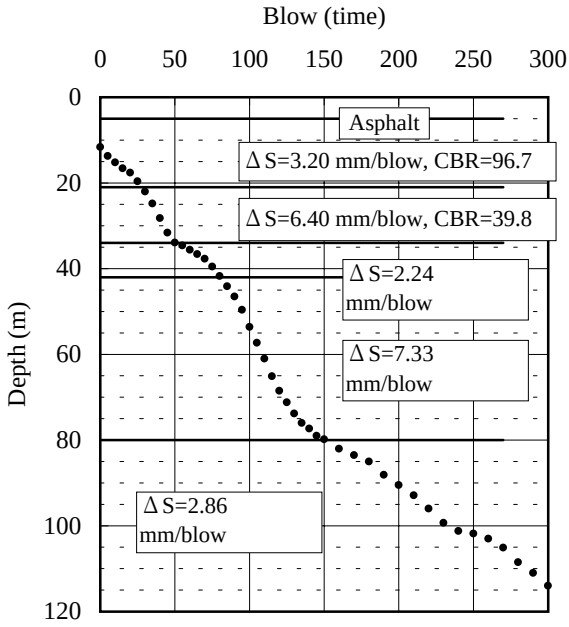


T/P-26 Sta. 447k+500 (RHS)



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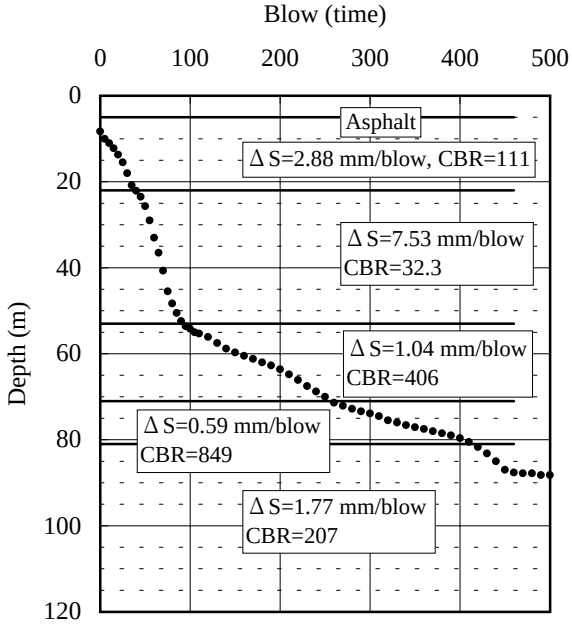

T/P-28 Sta. 448k+500 (RHS)