3.2.2 Specifications of Proposed Equipment

The types and standard specifications for the equipment were proposed based on the study results, as listed in Table-13. The specifications were in accordance with JAPAN'S CONSTRUCTION EQUIPMENT SPECIFICATION MANUAL 1989, Japan Mechanized Construction Association.

It is proposed that spare parts equivalent to 20% of FOB prices of machines will be supplied together with this Project. The effective specifications of spare parts for each machine should be carefully selected by reviewing the results of the Basic Study.

Table-13 PROPOSED STANDARD SPECIFICATIONS FOR EQUIPMENT

HAULING EQUIPMENT

		TRUCK WITH CRANE
ENGINE MAX. OUTPUT	HP	more than 167
WEIGHT		
· Max. Loading Cap.	kg	more than 4000
· Vehicle Weight	kg	more than 4650
· Gross Vehicle Weight	kg	more than 10000
DIMENSIONS		
· Overall Length	mm	more than 7150
· Overall Width	mm	less than 2300
· Overall Height	mm	less than 3100
· Wheel Base	mm	more than 4100
· Body		
Length	mm	more than 3550
Width	mm	more than 2100
Height	mm	more than 400
· Max. Outrigger Extended	mm	more than 3100
PERFORMANCE		
· Max. Travel Speed	km/h	more than 80
· Min. Turning Radius	mm	less than 6900
ENGINE		
· Type		Water Cooled Diesel
· Displacement	cc	more than 7100
POWER LINE		
· Transmission Type		Synchromesh
· No. of Speeds		5F - 1R
CRANE PERFORMANCE		
· Max. Load	kg	more than 2000
· Max. Lift	mm	more than 6500
· Max. Boom Length	mm	more than 5100
TIRE		
· Size		8.25 x 20-14
· No. of Tire (without spare)	piece	6
CABIN		
· Type		Double
· Seating Cap.	person	more than 6
ACCESSORIES		
· Wide Revolving Light	piece	1 (with siren)
· Traction Hook	piece	1

		CARGO TRUCK
ENGINE MAX. OUTPUT	HP	more than 78
WEIGHT		
· Max. Loading Cap.	kg	more than 1000
· Gross Vehicle Weight	kg	more than 3500
DIMENSIONS		
· Overall Length	mm	more than 4650
· Overall Width	mm	less than 1700
· Overall Height	mm	less than 2400
· Wheel Base	mm	more than 2450
· Body		
Length	mm	more than 2000
Width	mm	more than 1600
Height	mm	more than 380
CABIN		
· Type		Double
· Seating Cap.	person	more than 6
PERFORMANCE		
· Max. Torque	kg·m	more than 18
· Min. Turning Radius	mm	less than 5000
ENGINE		
· Type		Water Cooled Diesel
· Displacement	cc	more than 2650
POWER LINE		
· No. of Speeds		5F - 1R
· Drive		4 x 2
TIRE		
· Size		6.5 x 15 - 6
front		7 x 15 - 12
rear		
· No. of Tire (without spare)	piece	4
ACCESSORIES		
· Wide Revolving Light	piece	1
· Traction Hook	piece	1

		DUMP TRUCK
ENGINE MAX. OUTPUT	HP	more than 157
WEIGHT		
· Max. Loading Cap.	kg	more than 4000
· Vehicle Weight	kg	more than 4200
· Gross Vehicle Weight	kg	more than 9400
DIMENSIONS		
· Overall Length	mm	more than 5800
· Overall Width	mm	less than 2400
· Overall Height	mm	less than 3100
· Wheel Base	mm	more than 3200
· Body		
Length	mm	more than 3400
Width	mm	more than 2100
Height	mm	more than 480
PERFORMANCE		
· Max. Travel Speed	km/h	more than 100
· Min. Turning Radius	mm	less than 6200
ENGINE		
· Type		Water Cooled Diesel
· Displacement	cc	more than 6500
POWER LINE		
· Transmission Type		Synchromesh
· No. of Speeds		5F - 1R
TIRE		
· Size		8.25 x 20 - 14
· No. of Tire (without spare)	piece	6
GATE		
· Type		Tail Gate
ACCESSORIES		
· Wide Revolving Light	piece	1

		DUMP TRUCK
ENGINE MAX. OUTPUT	HP	more than 94
WEIGHT		
· Max. Loading Cap.	kg	more than 2000
· Vehicle Weight	kg	more than 2600
· Gross Vehicle Weight	kg	more than 5500
DIMENSIONS		
· Overall Length	mm	more than 4800
· Overall Width	mm	less than 2000
· Overall Height	mm	less than 2600
· Wheel Base	mm	more than 2700
· Body		
Length	mm	more than 2850
Width	mm	more than 1900
Height	mm	more than 320
PERFORMANCE		
· Max. Torque	kg·m	more than 23
· Min. Turning Radius	mm	less than 5600
ENGINE		
· Type		Water Cooled Diesel
· Displacement	cc	more than 3250
POWER LINE		
· Transmission Type		Synchromesh
· No. of Speeds		5F - 1R
TIRE		
· Size		7 x 16 - 10
· No. of Tire (without spare)	piece	6
GATE		
· Type		Tail Gate
ACCESSORIES		
· Wide Revolving Light	piece	1
· Traction Hook	piece	1

Table-13 PROPOSED STANDARD SPECIFICATIONS FOR EQUIPMENT

EXCAVATING EQUIPMENT		
		HYDRAULIC EXCAVATOR
ENGINE MAX. OUTPUT	HP	more than 27
OPERATING WEIGHT	kg	more than 3280
BUCKET TYPE		
· Capacity	m^3	more than 0.1
· No. of Teeth	piece	more than 4
DIMENSIONS		
· Overall Length	mm	more than 5100
· Overall Width	mm	less than 1800
· Overall Height	mm	less than 2450
· Ground Clearance of Undercarriage	mm	more than 250
· Min. Swing Radius	mm	less than 1750
· Track Length	mm	more than 1600
· Track Gauge	mm	more than 1200
PERFORMANCE		
· Swing Speed	rpm	more than 11
· Travel Speed	km/h	more than 3.5
· Arm Crowd Force	kg	more than 1750
· Bucket Digging Force	kg	more than 2400
WORKING RANGE		
· Digging Height	mm	more than 5250
· Dumping Height	mm	more than 3750
· Vertical Wall Digging Depth	mm	more than 2350
· Digging Reach (at ground)	mm	more than 5150
ENGINE		
· Type		Water Cooled Diesel
· Displacement	cc	more than 1430
HYDRAULIC SYSTEM		
· Pump		Variable-Capacity Piston Pump
· Flow	lt/min	more than 70
SHOES		
· Type		Double Grouser
· Width	mm	more than 300
BLADE		
· Width x Height	mm	more than 1550x350

AIR COMPRESSOR		
		AIR COMPRESSOR
ENGINE MAX. OUTPUT	HP	more than 24
WEIGHT	kg	more than 650
DIMENSIONS		
· Overall Length	mm	more than 2200
· Overall Width	mm	less than 1300
· Overall Height	mm	less than 1300
PERFORMANCE		
· Free Air Delivery	m^3/min	more than 2.5
· Discharge Pressure	kg/cm^2	more than 7
ENGINE		
· Type		Water Cooled Diesel
· Displacement	cc	more than 980
RECEIVER TANK		
· Capacity	ltr	more than 30
AIR COCK		
· Size	mm	more than 19
· No. of Cock	piece	more than 2
TIRE		
· Front (No. of Tire)		Caster (1)
· Rear (No. of Tire)		5 x 10 - 6 (2)

CONCRETE DESTRUCTIVE MACHINE					
		PNEUMATIC HAND BREAKER			PICK HAMMER
WEIGHT	kg	more than 30	WEIGHT	kg	more than 7
DIMENSIONS			DIMENSIONS		
· Length	mm	more than 650	· Length	mm	more than 470
· Cylinder Diameter	mm	more than 55	· Cylinder Diameter	mm	more than 35
· Shank			· Shank		
diameter	mm	more than 32	diameter	mm	more than 26
length	mm	more than 150	length	mm	more than 80
PERFORMANCE			PERFORMANCE		
· No. of Blow	bpm	more than 1550	· No. of Blow	bpm	more than 1300
· Air Consumption	m^3/min	less than 1.5	· Air Consumption	m^3/min	less than 1.2
· Piston Stroke	mm	more than 100	· Piston Stroke	mm	more than 125
HOSE			HOSE		
· Size	mm	more than 19	· Size	mm	more than 19
· Length	m	more than 20	· Length	m	more than 20
ATTACHMENT (per one breaker)			ATTACHMENT (per one breaker)		
· Hose	length x pce	20m x 2	· Hose	length x pce	20m x 2
· Hose Band	piece	4	· Hose Band	piece	4
· Shank			· Shank		
Moil Point	length x pce	450mm x 5	Moil Point	length x pce	450mm x 5
		350mm x 5			600mm x 5
Asphalt Cutter	length x pce	350mm x 10			

Table-13 PROPOSED STANDARD SPECIFICATIONS FOR EQUIPMENT

PAVING EQUIPMENT

PAVEMENT TOOLS

ASPHALT RAKE (STEEL)	piece	1
· Head Board (t x h x w)	mm	more than 1.6 x 65 x 600
· Handle Length	mm	more than 1750
· Weight	kg	less than 2
ASPHALT RAKE (WOOD)	piece	1
· Head Board (t x h x w)	mm	more than 19 x 90 x 600
· Handle Length	mm	more than 1800
IRON	piece	1
· Head Board (t x w)	mm	more than 19 x 140 x 180
· Handle Length (d x l)	mm	more than 34 x 1300
· Weight	kg	less than 8
SNOOTHER	piece	1
· Head Board	mm	more than 150 x 200
· Handle Length	mm	more than 1200
· Weight	kg	less than 8
TAMPER	piece	1
· Head Board (t x w)	mm	more than 16 x 150 x 150
· Handle Length (d x l)	mm	more than 34 x 1100
· Weight	kg	less than 5
SHOVEL	piece	5
· Head (w x l)	mm	more than 230 x 290
· Length	mm	more than 970
SCOOP	piece	5
· Head (w x l)	mm	more than 250 x 300
· Length	mm	more than 970
PICK	piece	2
· Type		Pick-Mattock Type
· Weight	kg	more than 2

ASPHALT BURNER

DIMENSIONS		
· Torch Diameter	mm	more than 80
· Length	mm	more than 1200
PERFORMANCE		
· Flame Length	mm	more than 600
· Tank Cap.	ltr	more than 35
FUEL		Kerosene
ATTACHMENT		
· Hose	piece	10 (with hose coupling)

COMPACTING EQUIPMENT

VIBRATORY ROLLER

ENGINE MAX. OUTPUT	HP	more than 6
OPERATING WEIGHT	kg	more than 750
DIMENSIONS		
· Overall Length	mm	more than 2900
· Overall Width	mm	less than 850
· Overall Height	mm	less than 1100
· Wheel Base	mm	more than 570
PERFORMANCE		
· Max. Travel Speed	km/h	more than 4
· Frequency	vpm	more than 3300
· Centrifugal Force	kg	more than 1000
ENGINE		
· Type		Air Cooled Diesel
ROLLER		
· Diameter x Width	mm	more than 400 x 700
· No. of Wheel	piece	2

VIBRATORY PLATE COMPACTOR

ENGINE MAX. OUTPUT	HP	more than 2.6
WEIGHT	kg	more than 75
DIMENSIONS		
· Overall Length	mm	more than 870
· Overall Width	mm	less than 380
· Overall Height	mm	less than 840
PERFORMANCE		
· Max. Travel Speed	km/h	more than 1.5
· Frequency	vpm	more than 5500
· Centrifugal Force	kg	more than 1500
ENGINE		
· Type		Air Cooled Gasoline
POWER LINE		
· Type		V-Belt
VIBRATING PLATE		
· Length x Width	mm	more than 550 x 380

Table-13 PROPOSED STANDARD SPECIFICATIONS FOR EQUIPMENT

PAVING EQUIPMENT			CONCRETE EQUIPMENT						OTHER EQUIPMENT		
		ASPHALT SPRAYER			CONCRETE MIXER			CONCRETE VIBRATOR			PUMP
ENGINE MAX. OUTPUT	HP	more than 3.4	ENGINE MAX. OUTPUT	HP	more than 5	ENGINE MAX. OUTPUT	HP	more than 5	ENGINE MAX. OUTPUT	HP	more than 3.8
DIMENSIONS · Overall Length · Overall Width · Overall Height	 mm mm mm	 more than 3450 less than 1700 less than 1900	PERFORMANCE · Mixing Cap. · Drum Rev.	 ltr rpm	 more than 100 more than 27	VIBRATING HEAD DIAMETER	mm	more than 28	WEIGHT	kg	more than 38
PERFORMANCE · Spray Pump Cap. · Bitumen Lower Tank Cap.	lt/min ltr	more than 30 more than 600	ENGINE · Type		Water Cooled Diesel	WEIGHT · Head (with 4m lead shaft) · Engine	kg kg	less than 12 less than 30	DIMENSIONS · Overall Length · Overall Width · Overall Height	 mm mm mm	 more than 500 less than 430 less than 490
ENGINE · Type		Air Cooled Gasoline	MIXER · Type		Handwheel Tilting Type	PERFORMANCE · Frequency · Amplitude · Length	vpm mm mm	more than 9000 less than 1.4 less than 480	PERFORMANCE · Discharge · Head · Bore	m^3/min m mm	more than 0.7 more than 20 more than 50
BURNER · Fuel		Kerosene	TIRE · Size · No. of Tire	 piece	3.5 x 5 - 4 4	LEAD SHAFT · Flexible Shaft Diameter · Rubber Hose Diameter · Length	 mm mm m	 more than 10 more than 29 more than 4	ENGINE · Type · Displacement	 cc	Air Cooled Diesel more than 190
TIRE · Front (No. of Tire) · Rear (No. of Tire)		Caster (1) 6.5 x 16 - 8 (2)				ENGINE · Type		Air Cooled Gasoline	ATTACHMENT (per one pump) · Suction Hose · Discharge Hose	length x pce m	5m x 3 (with strainer, hose coupling set) 60 (with 3 sets of hose coupling)
ATTACHMENT · Hose · Spray Bar · Spray Nozzle	length x pce piece piece	5m x 2 (with hose coupling) 10 10				ATTACHMENT (per one engine) · Vibrating Head · Lead Shaft	 piece piece	 2 2			

Table-13 PROPOSED STANDARD SPECIFICATIONS FOR EQUIPMENT

OTHER EQUIPMENT															
		HAND TOOLS			GENERATOR				ELECTRIC WELDER			SAFETY TOOLS		
LARGE BOX · Description		One set(Annex List)	ENGINE MAX. OUTPUT	HP	more than 16	RATED INPUT	KVA	more than 8.3	BARRICADE · Type · Height x Length	piece mm	20 A type, Steel 800 x 1200
SMALL BOX · Description		One set(Annex List)	WEIGHT	kg	more than 310	RATED INPUT VOLTAGE	V	more than 200			
			DIMENSIONS · Overall Length · Overall Width · Overall Height	 mm mm mm	 more than 1390 less than 650 less than 720	RATED OUTPUT CURRENT	A	more than 180	COLLAR CORN · Height	piece mm	20 700
						WEIGHT	kg	less than 40	SAFETY CORN · Height	piece mm	20 700
			PERFORMANCE · Rated Output · Power Factor · Frequency · Voltage · Phase	 KVA % HZ V 	 more than 12.5 more than 80 50 - 60 220/380 3	DIMENSIONS (w x h x l)	mm	less than 320 x 500 x 550	FLOOD LIGHT · Type	piece	2 200 V, 500 W
						TYPE		AC/DC Type	SAFETY LAMP · Type	piece	1 200 V, with Base
			ENGINE · Type · Displacement	 cc	 Water Cooled Diesel more than 850	ATTACHMENT · Holder · Ground Clip · Cable (secondary side)	piece piece m	3 3 each 20	CABLE DRUM · Type · Cable · Weight	piece kg	5 Auto Free VCT (2^{Sq} x 4^{C} x 30m) less than 16

Table-13 PROPOSED STANDARD SPECIFICATIONS FOR EQUIPMENT

(6/6)

OTHER EQUIPMENT					
		STORAGE CONTAINER			STEP BRIDGE
DIMENSION (TYPE)	ft	20	WEIGHT (per one piece)	kg	more than 55
INSIDE TRIM		with Rack (steel & wooden)	DIMENSIONS · Overall Length · Overall Width · Overall Height	 mm mm mm	 more than 2200 more than 300 more than 200
			PERFORMANCE · Durable Weight (set)	kg	more than 12000
			ONE SET · No. of Bridge	piece	2

3.3 Project Implementation Plan

3.3.1 Basic Concept

The Project shall be implemented within the scope of Japan's Grant Aid Programme and the authority for the Project shall be the Government of Tanzania. Therefore, after the signing of the Exchange of Notes between the Governments of Japan and Tanzania, the Project shall be implemented in accordance with the provisions of Japan's Grant Aid Programme.

The Ministry of Works (MOW) is the responsible agent for comprehensively implementing the Project while the Roads and Aerodromes Division (RAD) and Regional Engineers Offices (REOs) will take charge of management for equipment provided.

The Project cost shouldered by the Government of Japan covers the manufacturing of the proposed equipment, transportation of the equipment from Japan to the port of entry in Tanzania (Dar es Salaam Port) and the relevant consulting services for implementing the Project.

The scope of undertaking by the Government of Tanzania covers the transportation of the proposed equipment from Dar es Salaam Port to Dar es Salaam Regional Engineer's Office Headquarter and the implementation of operation and maintenance of the equipment.

3.3.2 Implementation Supervisory Plan

In supervising the implementation for the Project, appropriate and effective supervision will be enforced in accordance with adequate consultations with the Tanzanian side. Primary precautions for the supervisory process are as shown below:

(a) Prior to the delivery of equipment and materials, their suppliers will be asked to submit an execution plan. Its contents will be sufficiently studied, and the propriety of the schedule, the procurement plan, the equipment, and the material specifications will be judged on that basis. Especially the spare parts for all equipment shall be specified by full discussions between Tanzania and Japan sides.

(b) Before the shipment of the equipment, a study will be made in Japan as to whether or not their specifications, contents, volume, etc., meet the design requirements.

(c) Concerning the delivery and handing over of the equipment, confirmation will be made as to whether or not the suppliers have appropriately conduct operational guidance and whether or not they have provided proper guidance regarding the operation, maintenance, and management of the equipment.

(d) In order to smoothly enforce the implementation, close contacts will be maintained with the Tanzanian side, the consultants and the suppliers, and sufficient consultations will be carried out with all of them.

3.3.3 Procurement Plan

All of the proposed equipment shall be procured in Japan, because of the unavailability of such equipment in Tanzania and in consideration with the reliability in equipment manufacture, the easiness in future repair and maintenance services, and the time schedule for this case of grant cooperation.

3.3.4 Implementation Schedule

Implementation of the Project is structured by three phases, i.e. detailed design, procurement (including marine transportation) and handing over. The periods required are five months for detailed design and seven and a half months from procurement to handing over, as shown in Table-14.

Table-14 PROJECT IMPLEMENTATION SCHEDULE

	1	2	3	4	5	6	7	8	9	10	11	12	13
Detailed Design	(5 months)												
Equipment Procurement and Supervisory	Manufacture of Equipment							Marine Transportation					
									Inland Transportation				
	(7.5 months)								Inspection/ Handing Over				

Main stages are described below.

Detailed Design

After the signing of the Exchange of Notes between the Governments of Japan and Tanzania, the detailed design related to providing construction equipment shall be executed by a Japanese consulting firm. The detailed design works shall comprise the following preparation;

- Specifications for the equipment
- Cost estimation of the Project
- Tender and contract documents for the equipment procurement

Tendering

The consultant shall execute the following services relevant to the tendering for Tanzania;

- Tender notice
- Tender pre-qualification
- Tendering
- Tender evaluation

Manufacture of equipment

After formalizing the contract, the contractor will receive the note of contract from the Government of Japan. Then, the contractor will manufacture the equipment.

Transportation of equipment

The Japanese contractor will execute the marine transportation from Japan to Dar es Salaam Port of Tanzania. The Government of Tanzania has the responsibility for the land transportation from Dar es Salaam to the Dar es Salaam Regional Engineer's Office Headquarters.

Handing over of equipment

The consultant and contractor will execute the following services at the Dar es Salaam Regional Engineer's Office Headquarters:

- Handing over of Operation Manuals for all equipment

- Handing over of Maintenance Manuals for all equipment
- Assembly necessary for equipment
- Guidance of operation for all equipment
- Inspection and handing over

The cost to be shouldered by Tanzania is roughly estimated as follows:

In-land transportation	6,989	thousand Tanzania Shilling
Custom clearance fee	4,735	thousand Tanzania Shilling
Total	11,724	thousand Tanzania Shilling

CHAPTER 4

PROJECT EVALUATION AND CONCLUSION

CHAPTER 4

PROJECT EVALUATION AND CONCLUSION

The implementation of this Project will greatly benefit to a population of 19 million (85% of the total) within 650,000 km^2 (74% of the entire land area). This area spans 16 regions in Tanzania and will also stimulate national economic growth for the middle and long term recovery programmes.

The effect and extent of improving the present situation are summarized in Table-15.

Table-15 EFFECT AND EXTENT OF IMPROVING THE PRESENT SITUATION BY IMPLEMENTING THE PROJECT

Present Condition and Problems	Proposed Measures	Effect and Improvement Level by the Project
Insufficient maintenance and a lack of development activities on long-distance trunk roads have harmed the national economy by raising transportation costs and ruining facilities.	Providing equipment to facilitate sufficient maintenance activities for bitumen trunk roads.	Sufficient maintenance activities on trunk roads will help to increase rural area development (including the high potential agricultural areas). It will also promote employment opportunities as well as establishing economical and cost-stable transportation.
Improvement on trunk roads is sluggish due to lack of equipment and staff.		Providing equipment will greatly help to implement the Integrated Roads Programme. This new equipment will break the vicious circle of aging and insufficient equipment.

The distribution of equipment fleets to Other Regions will be reviewed based on an engineering and economic appraisal of the progress of the IRP and the Project. This review will be conducted during or after the distribution of the first fleets into the 8 "A-Rank" Regions.

APPENDICES

APPENDIX 1. Member List of the Basic Design Study Team

MEMBERS OF THE BASIC DESIGN STUDY

Mr. Koichi MIYOSHI	Leader, Director, Second Basic Design Study Division Grant Aid Study & Design Department Japan International Cooperation Agency (JICA)
Mr. Yoshiro SHIMIZU	Road Maintenance Planner, Manager for Machinery Division Matsue National Highway Office Chugoku Regional Construction Bureau Ministry of Construction
Mr. Kenji MAEKAWA	Project Coordinator, Second Basic Design Study Division Grant Aid Study & Design Department Japan International Cooperation Agency (JICA)
Mr. Minoru MIURA	Road Maintenance Planner, Katahira & Engineers International
Mr. Yoshihiko MISHINA	Equipment Management Planner, Katahira & Engineers International
Mr. Hidetomo AKUTSU	Equipment Control and Maintenance Planner/Estimator, Katahira & Engineers International

APPENDIX 2. Survey Schedule

Survey Schedule during Oct. 27 ~ Nov. 17, 1992

No.	Date	Activities	
		Discussion etc.	Site Survey
1	1992 Oct. 27 (Tue)	· Road Maintenance Planner (MR. MIURA), Equipment Management Planner (MR. MISHINA), Equipment Control and Maintenance Planner/ Estimator (MR. AKUTSU) Lv. Tokyo Ar. Amsterdam	
2	Oct. 28 (Wed)	· Above persons Lv. Amsterdam	
3	Oct. 29 (Thu)	· Above persons Ar. Dar es Salaam · Explanation on Inception Report and discussion on site survey schedule, questionnaire, etc. at MOW, EOJ and JICA	
4	Oct. 30 (Fri)	· Moving to Kibiti and Rufiji River	· Roads in DSM REO and Coast REO · Ferry facility on Rufiji River · PEHCOL Kibiti Workshop
5	Oct. 31 (Sat)	· Moving to Kunduchi	· Roads, workshop and equipment at DSM REO · Collecting data at DSM REO · Roads in Coast REO
6	Nov. 1 (Sun)	· Moving to Bagamoyo	· Trunk and rural roads in DSM REO and Coast REO
7	Nov. 2 (Mon)	· Team Leader (MR. MIYOSHI), Road Maintenance Planner (MR. SHIMIZU) and Project Coordinator (MR. MAEKAWA) Lv. Tokyo Ar. London	
		· Moving to Kibaha	· Roads, workshop and equipment in Coast REO · Data collection in Coast REO
		· Moving to Morogoro	· Roads, workshop and equipment in Morogoro REO · Data collection in Morogoro REO · Workshop and equipment of PEHCOL Central Workshop in Morogoro

No.	Date	Activities	
		Discussion etc.	Site Survey
		· Moving to Iringa	· Roads, workshop and equipment in Iringa REO · Data collection in Iringa REO
8	Nov. 3 (Tue)	· M/S. MIYOSHI, SHIMIZU and MAEKAWA Lv. London	· Roads in Iringa REO
		· Moving to Dodoma	· Roads, workshop and equipment in Dodoma REO · Data collection in Dodoma REO
		· Moving to Morogoro · Back to DSM	· Data collection in Morogoro REO
9	Nov. 4 (Wed)	· M/S. MIYOSHI, SHIMIZU and MAEKAWA Ar. DSM · Explanation on Inception Report and discussion on survey schedule and equipment supplied under Japan's Grant Aid at EOJ and JICA · Discussion on IRP implementation and PEHCOL at World Bank · Internal meeting	
10	Nov. 5 (Thu)	· Courtesy to MOF · Explanation on Inception Report at Planning Commission · Visiting at DSM Road Improvement and Maintenance Project site. · Data collection by MR. AKUTSU at DSM · M/S. MIYOSHI, SHIMIZU, MAEKAWA, MIURA and MISHINA moving to Tanga	· Roads in Coast REO and Tanga REO
11	Nov. 6 (Fri)	· Data collection at DSM	· Roads, workshop and equipment in Tanga REO · Discussion and data collection at CARL BRO COWI Consultant
		· Moving to Moshi	· Roads, workshop and equipment in Kilimanjaro REO · Discussion and data collection at WALTER INTERNATIONAL Consultant
		· Moving to Tarangire	· Roads in Arusha REO

No.	Date	Activities	
		Discussion etc.	Site Survey
12	Nov. 7 (Sat)	· Data collection at DSM · Moving to Arusha	· Workshop facilities and equipment in Arusha REO
13	Nov. 8 (Sun)	· Moving to DSM · Internal meeting	· Roads in Arusha REO · Data collection
14	Nov. 9 (Mon)	· Explanation on Inception Report and discussion on survey schedule, road maintenance equipment, etc. at MOW · Discussion on maintenance work, work volume, selection and number of equipment, deposition plan, etc. · Discussion on construction situation and PEHCOL at MECCO (Contractor) · Data collection	
15	Nov. 10 (Tue)	· Discussion on selection and number of equipment, deposition plan, etc. at MOW · Drafting Minutes of Discussions · Data collection	
16	Nov. 11 (Wed)	· Discussion on Inception Report and Minutes of Discussions draft · Discussion on Minutes of Discussions draft · Data collection	
17	Nov. 12 (Thu)	· MR. AKUTSU Lv. DSM Ar. Nairobi · Typing Minutes of Discussions · Signing on Minutes of Discussions at MWO and MOF	
18	Nov. 13 (Fri)	· M/S MAEKAWA, MIURA Lv. DSM Ar. Nairobi · Report on the Study at EOJ and JICA	

No.	Date	Activities	
		Discussion etc.	Site Survey
19	Nov. 14 (Sat)	· Preparation for homeward bound · M/S MIYOSHI, SHIMIZU and MIYOSHI Lv. DSM	
20	Nov. 15 (Sun)	· Ar. Paris	
21	Nov. 16 (Mon)	· Lv. Paris	
22	Nov. 17 (Tue)	· Ar. Tokyo	

APPENDIX 3. List of Persons Met

LIST OF PERSONS MET

Name and Organization	Position
Ministry of Works (MOW)	
Hon. KIULA, Nalaila L.	Minister
Dr. MLINGWA, George	Principal Secretary
Mr. TEMBA, A.N.	Director of Planning & Research
Mr. URIO, H.G.	Director, Roads & Aerodromes
Mr. MALISA,	Director, Planning & Research
Mr. MARMO, F.	Chief Engineer, Programming
Mr. NGUMBULU, J.L.	Chief Engineer, Trunk Roads & Aerodromes
Dr. KOMBA, P.F.C.	Chief Engineer, Rural Roads
Mr. NDYAMUKAMA,	Senior Engineer
Mr. KATOH, Toshiaki	Expert, Road Transportation
Mr. KANEKO,	Expert, Road Maintenance
Mr. SEKIGUCHI,	Expert, Bridge Engineering
ARUSHA REGION	
Mr. KIJANGWA, H.	Regional Engineer
COAST REGION	
Mr. MASENHA, A.C.	Regional Engineer
Mr. MWAGAMASASI, M.C.L.	Trunk Road Engineer
Mr. NDUNG	Mechanical Engineer
Mr. ILOLE, Clemente P.	Planning Engineer

Name and Organization	Position
DAR ES SALAAM REGION	
Mr. FUKO, A.K.	Regional Engineer
Mr. MADINDA, M.C.	Trunk Road Engineer
Mr. RINGO, E.D.	Mechanical Engineer
Mr. KAJIRU, A.	Assistant Mechanical Engineer
DODOMA REGION	
Mr. KYOMBO, L.M.	Planning Engineer
IRINGA REGION	
Mr. LUSENGE, A.F.	Regional Engineer
KILIMANJARO REGION	
Mr. NYITI, B	Regional Engineer
Mr. TUCKER, Dieter	Advisor to the REO
MOROGORO REGION	
TANGA REGION	
Mr. MINJA, Gadiel N.E.L.	Regional Engineer
Mr. LYAKURWA, Paul L.S.	Trunk Road Engineer
Mr. McKenna, James	Road Maintenance Advisor

Name and Organization	Position
Ministry of Finance (MOF)	
Mr. MUNENI, A.I.	Assistant Commissioner (Planning Commission)
President's Office	
Mr. KAZAURA, Fulgence M.	Principal Secretary and Secretary of Planning Commission
World Bank	
Mr. MORRIS, Peter P.W.	Principal Transport Engineer, IRP
Plant & Equipment Hire Company, Ltd. (PEHCOL)	
Mr. MGONJA, Willy J.	Manager, Central Workshop
MECCO	
Mr. BAROZI, F	Director General
Embassy of Japan	
Mr. NAGAI, Shigenobu	Ambassador
Mr. ITOH, Satoshi	First Secretary
Japan International Cooperation Agency (JICA)	
Mr. KUMOMI, Masahiro	Resident Representative
Mr. KATSUTA, Yukihide	Assistant Resident Representative
DSM Road Improvement & Maintenance Project Office	
Mr. KUMAGAI, Tamihito	The Consultant
Mr. MIYAZAWA, Yoshimi	Project Manager
Mr. SAKAMOTO, Tetsuo	Deputy Project Manager

APPENDIX 4. Minutes of Discussions

MINUTES OF DISCUSSIONS
OF
BASIC DESIGN STUDY ON THE PROJECT FOR
PAVEMENT MAINTENANCE EQUIPMENT
FOR TRUNK ROADS
IN
THE UNITED REPUBLIC OF TANZANIA

In response to a request from the Government of the United Republic of Tanzania, the Government of Japan decided to conduct a Basic Design Study on the Project for Pavement Maintenance Equipment for Trunk Roads in Tanzania (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Tanzania a study team, which is headed by Mr.Koichi Miyoshi, Director, Second Basic Design Study Division, Grant Aid Study & Design Department, JICA, and was scheduled to stay in the country from 29th October to 14th November, 1992.

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

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

Dar es Salaam, 12th November, 1992

Mr.KOICHI MIYOSHI
Leader
Basic Design Study Team,
JICA.

Dr.G.MLINGWA
Principal Secretary
Ministry of Works.

Mr.A.I.MUNENI
Assistant Commissioner for External Finance
Ministry of Finance.

ATTACHMENT

1. Objective

The objective of the Project is to equip the Ministry of Works (MOW) with appropriate pavement maintenance equipment which are essential for paved road maintenance activities in order to keep the Trunk road network in good condition.

2. Project Area

Project area is throughout the country of Tanzania in road maintenance activities as shown in Annex I.

3. Responsible Organization and Executing Organization

(1) Responsible Organization : Ministry of Works

(2) Executing Organization : Roads and Aerodromes Department
Ministry of Works

4. Equipment Requested by the Government of Tanzania

After discussions with the Basic Design Study Team, the equipment shown in Annex II was finally requested by the Tanzania side.

However, the final components of the Project will be decided after further studies.

5. Japan's Grant Aid system

(1) The Government of Tanzania has understood the system of Japan Grant Aid expalained by the Team.

(2) The Government of Tanzania will take necessary measures, described in Annex III for smooth implementation of the Project, on condition that the Grant Aid Assistance by the Government of Japan is extended to the Project.

6. Utilization of Equipment in the Project

The equipment in the Project shall be utilized by the Regional Engineer's Offices to implement timely road maintenance works by force account. The use of the equipment will contribute to the Roads Maintenace Program under the Integrated Roads Project.

7. Monitoring

Ministry of Works will be responsible to monitor arrangement for operations and maintenance of equipment provided in the Project. Reports will be prepared as a part of Quarterly Progress Report specified in the Road Maintenance Management System Manual.

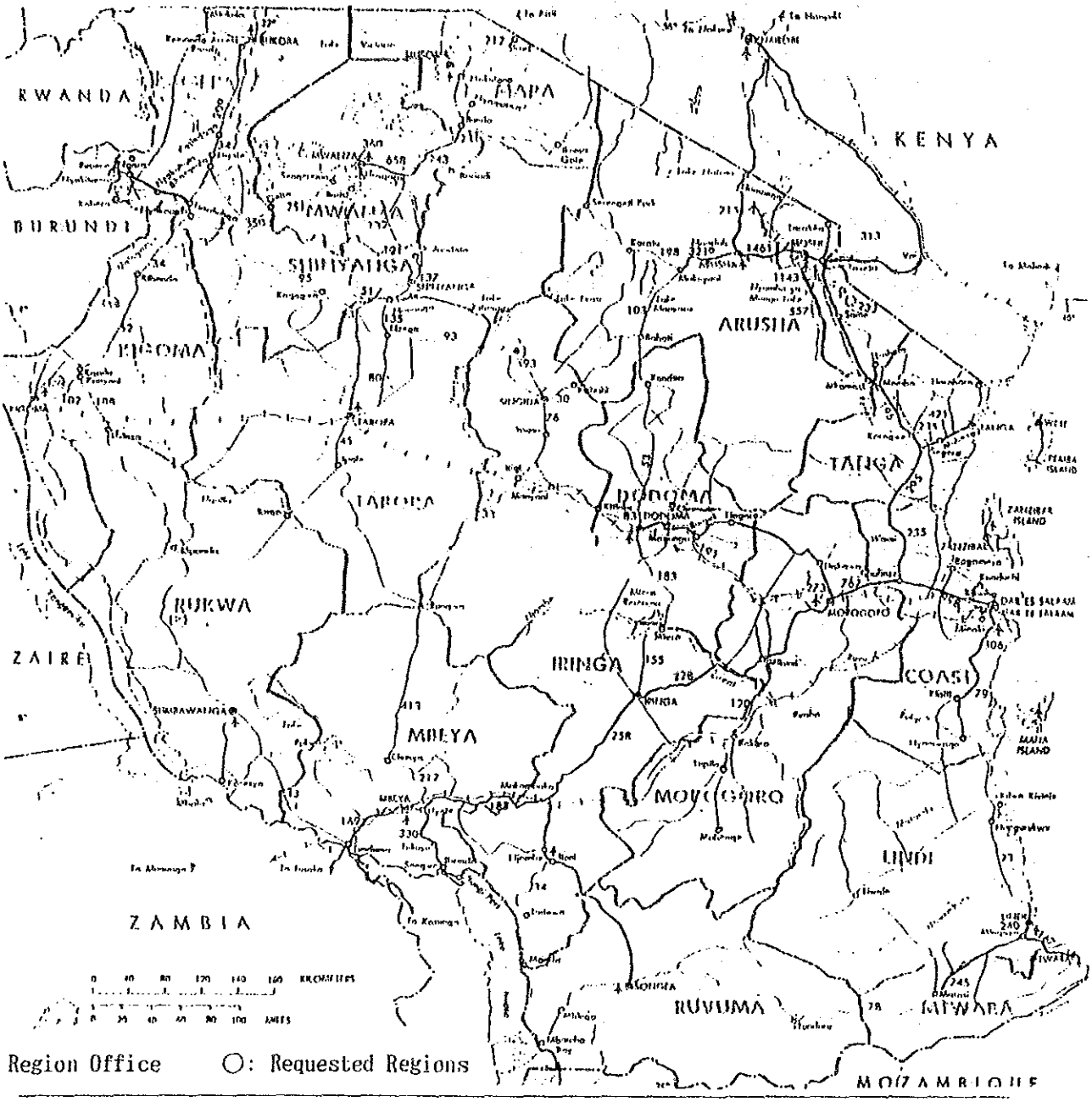
8. Schedule of the Study

(1) The Team will proceed to further studies in Tanzania until 14th November, 1992.

(2) Based on the Minutes of Discussions and technical examination of the study results, JICA will complete the final report and send it to the Government of Tanzania by February, 1993.

ANNEX - I

PROJECT AREA



Region Office ○: Requested Regions

①ARUSHA (Arusha) ②COAST (Kibaha) ③DAR ES SALAAM (Dar es Salaam)

④DODOMA (Dodoma) ⑤IRINGA (Iringa) ⑥KAGERA (Bukoba) 7. KIGOMA (Kigoma)

⑧. KILIMANJARO (Moshi) ⑨LINDI (Lindi) ⑩. MARA (Musoma) ⑪. MBEYA (Mbeya)

⑫. MOROGORO (Morogoro) ⑬. MTWARA (Mtwara) ⑭. MWANZA (Mwanza) 15. RUKWA (Rukwa)

⑯. RUVUMA (Songea) ⑰. SHINYANGA (Shinyanga) 18. SINGIDA (Singida)

19. TABORA (Tabora) ⑳. TANGA (Tanga)

ANNEX - II

Equipment Requested by the Government of Tanzania

1. Requested Regions

Priority A: COAST, DODOMA, IRINGA, KILIMANJARO, SHINYANGA, MBEYA, MOROGORO, TANGA.
Priority B: ARUSHA, KAGERA, MWANZA, MARA.
Priority C: DAR ES SALAAM, LINDI, MTWARA, RUVUMA.

Provision of equipment for the Regional Engineer's Offices under categories B and C are subject to the cost review in the Basic Design Study as well as the conditions of Japan's Grant Aid.

2. List of Equipment and Materials for a Regional Engineer's Office.

Name of Maintenance Equipment and Materials		Quantity per one Region
1. Truck with crane	W-cabin Cargo capacity 4tons	1 unit
2. Truck	W-cabin Cargo capacity 1ton	2 units
3. Dump Truck	Cargo capacity 4tons	1 unit
4. Dump Truck	Cargo capacity 2tons	1 unit
5. Mini excavator	Bucket capacity 0.1m3	1 unit
6. Air compressor	Portable and Diesel fuel type Supply capacity 2.5m3/min.	1 unit
7. Small breaker	Pneumatic type W=30kg class	2 units
8. Pick hammer	Pneumatic type W=8kg class	2 units
9. Tools for pavement		2 sets
10. Asphalt burner	Kerosine heating type	1 set
11. Hand roller	Diesel fuel type W=0.7ton class	1 unit
12. Plate compactor	Petrol fuel type W=70kg class	1 unit
13. Asphalt sprayer	Kerosine heating type	1 unit
14. Concrete mixer	Slant trunk and Diesel fuel type Mixing capacity 0.1m3 class	1 unit
15. Concrete vibrator	Stick size 30mm x 250mm	2 units
16. Water pump	Portable and Petrol fuel type caliber size D=50mm	2 units
17. Up and down bridge	Steel type 0.5m x 4.0m	1 set
18. Tools for maintenance	1-large box 2-small box	1 set
19. Generator	Diesel fuel type, 10 KvA. 220v	1 unit
20. Electric welder	DC/AC arc type, 5 KvA	1 unit
21. Tools for Traffic control		1 set
22. Storage container	20 foot class	1 set
23. Spare parts for equipment		20 %
Total		28

ANNEX - III

Necessary measures to be undertaken by the Government of Tanzania

1. To bear commissions to the Japanese foreign exchange bank for the banking services based upon the Banking Arrangement.

2. To ensure prompt unloading and customs clearance at ports of disembarkation in the United Republic of Tanzania and internal transportation therein of the products purchased under the Grant.

3. To accord Japanese nationals whose services may be required in connection with the supply of the equipment and services under the verified contract such facilities as may be necessary for their entry into Tanzania and stay therein for the performance of their work.

4. To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the United Republic of Tanzania with respect to the supply of the products and service under the Verified Contracts.

5. To operate and maintain properly and effectively the equipment provided under the Grant for the execution of the works for the Project.

6. To bear all the expenses other than those to be borne by the Grant, necessary for the execution of the Project.

APPENDIX 5. List of References

REFERENCES

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5-1 The Economist Intelligence Unit, Tanzania No.3 1990
5-2 Maps

DEVELOPMENT PLAN (Integrated Roads Project, IRP)

5-3 Staff Appraisal Report, The United Republic of Tanzania, IRP, April 30 1990
5-4 Staff Appraisal Report, The United Republic of Tanzania, IRP, May 6 1990
5-5 Road Maintenance Initiative, Project Document for A National Seminar on Road Maintenance Policy Reform 6-8 May, 1992
5-6 Road Maintenance Initiative, Reports on Studies on Road Maintenance Policy Issues, 6-8 May, 1992
5-7 Status Report on The Integrated Roads Project (IRP I) and A Presentation on IRP II The Consultative Group Meeting, Paris - June 1992
5-8 IRP, Monthly Progress Report No.14, July 1992
5-9 World Bank Mission Report Oct. 1992
5-10 IRP, Implementation Review, 17th Nov. 1992
5-11 IRP, Status Report for The IRP Implementation Review Meetings, Nov. 1992
5-12 IRP, Implementation Review, Trunk Roads Rehabilitation/Upgrading Programme: Donor and Development Budget Requirements to Meet IRP I and II Targets 16-20 Nov. 1992
5-13 IRP, Road Rehabilitation/Upgrading (Trunk & Rural), Criteria for Determinating Priorities, Nov. 1992

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5-14 Annual Work Programme/Performance Budget 1992/93
5-15 Road Financing and Disbursement in Tanzania Aug. 1992
5-16 IRP, Organizational Review, Aug. 1992
5-17 IRP, Report on a Study of Administration of the Transport Sector, Aug. 13, 1992

ROADS

5-18 Trunk Roads Network in Tanzania
5-19 Trunk & Regional Roads Network by Region
5-20 Traffic Volume on Road Network (AADT)
1985 ~ 1989
5-21 Arterial Roads Condition Study Tanzania

MANAGEMENT SYSTEM

5-22 Road Maintenance Management System Manual

DATA ON REGIONAL ENGINEER'S OFFICE (REO)

5-23 Arusha REO
5-24 Coast REO
5-25 Dar es Salaam REO
5-26 Dodoma REO
5-27 Iringa REO
5-28 Kilimanjaro REO
5-29 Morogoro REO
5-30 Tanga REO

OTHERS

5-31 General Regulations for the Procurement of Works, Services and Supplies under IRP, Oct. 1991
5-32 Letter of Invitation to Submit a Proposal for Provision of Technical Assistance for REO in Kagera and Mara Regions
5-33 Rural Roads Organization and Management Study, Final Report and Appendices Feb. 1989

APPENDIX 6. Reference Tables

Table 6-1 GROSS DOMESTIC PRODUCT BY INDUSTRIAL ORIGIN
GDP (In million shilling at constant prices of 1976)

	1985	1986	1987	1988	1989
Nominal GDP	108,083	143,034	192,969	290,667	351,228
Real GDP	24,278	25,158	25,972	27,085	28,272
Growth Rate (%)	2.6	3.0	3.2	4.3	4.4
By Industrial Origin					
Agriculture, Fishery and Forestry	10,931	11,557	12,066	12,606	13,183
Mining & Quarrying	174	154	149	138	139
Manufacturing	2,075	1,991	2,075	2,187	2,299
Electricity and Water	461	544	584	574	588
Construction	601	705	736	780	821
Commerce & Hotel	2,662	2,958	3,112	3,225	3,378
Transportation and Communication	1,509	1,504	1,551	1,652	1,730
Finance and Enterprise	3,046	3,318	3,395	3,500	3,632
Government Services	3,616	3,225	3,243	3,343	3,442
Banking Charge (-)	797	886	862	920	940
Nominal National Income per Person (Shilling)	5,221	6,715	8,811	12,919	15,205
Real National Income per Person (Shilling)	1,172	1,181	1,186	1,203	1,223
Exchange Rate (Shilling/US$)	16.499	51.719	83.717	125.000	192.300

Table 6-2 TRUNK AND REGIONAL ROAD LENGTH BY REGION

REGION	TRUNK ROAD [Km]								REGIONAL ROAD (Km)
	TOTAL	UNPAVED			PAVED				
		SUB TOTAL	EARTH	GRAVEL	SUB TOTAL	GOOD	FAIR	POOR	
ARUSHA	542.80	280.80 [52%]	0 (0%)	280.80 (100%)	262.00 [48%]	171.80 (66%)	86.70 (33%)	3.50 (1%)	1,280
COAST	433.50	87.60 [20%]	87.60 (100%)	0 (0%)	345.90 [80%]	170.80 (49%)	68.23 (20%)	106.87 (31%)	736
DAR ES SALAAM	56.80	0 [0%]	0 (0%)	0 (0%)	56.80 [100%]	26.80 (47%)	14.00 (25%)	16.00 (28%)	432
DODOMA	598.10	445.40 [74%]	128.00 (29%)	317.40 (71%)	152.70 [26%]	152.20 (100%)	0.50 (0%)	0 (0%)	598
IRINGA	710.00	319.60 [45%]	161.83 (51%)	157.77 (49%)	390.40 [55%]	177.24 (45%)	119.73 (31%)	93.43 (24%)	1,400
KAGERA	713.60	539.60 [76%]	325.00 (60%)	214.60 (40%)	174.00 [24%]	136.50 (78%)	11.50 (7%)	26.00 (15%)	1,226
KIGOMA	423.80	415.20 [98%]	221.50 (53%)	193.70 (47%)	8.60 [2%]	0 (0%)	8.60 (100%)	0 (0%)	626
KILIMANJARO	399.90	172.90 [43%]	153.00 (88%)	19.90 (12%)	227.00 [57%]	80.00 (35%)	147.00 (65%)	0 (0%)	542
LINDI	345.51	226.90 [66%]	114.89 (51%)	112.01 (49%)	118.61 [34%]	48.10 (41%)	34.93 (29%)	35.58 (30%)	598
MARA	351.80	264.80 [75%]	147.80 (56%)	117.00 (44%)	87.00 [25%]	87.00 (100%)	0 (0%)	0 (0%)	634
MBEYA	764.11	401.00 [52%]	180.00 (45%)	221.00 (55%)	363.11 [48%]	122.02 (33%)	97.25 (27%)	143.84 (40%)	1,811
MOROGORO	560.00	178.00 [32%]	72.00 (40%)	106.00 (60%)	382.00 [68%]	129.38 (34%)	98.68 (26%)	153.94 (40%)	1,082
MTWARA	208.40	101.50 [49%]	83.50 (82%)	18.00 (18%)	106.90 [51%]	29.73 (25%)	29.84 (29%)	47.33 (46%)	609
MWANZA	403.10	241.20 [60%]	0 (0%)	241.20 (100%)	161.90 [40%]	107.10 (66%)	40.10 (25%)	14.70 (9%)	1,064
RUKWA	834.50	832.50 [99.8%]	456.88 (55%)	375.62 (45%)	2.00 [0.2%]	0.50 (25%)	0.58 (29%)	0.92 (46%)	979
RUVUMA	855.00	541.00 [63%]	408.00 (75%)	133.00 (25%)	314.00 [37%]	200.50 (64%)	50.58 (16%)	62.92 (20%)	928
SHINYANGA	418.90	328.70 [78%]	38.50 (12%)	290.20 (88%)	90.20 [22%]	81.50 (90%)	2.00 (2%)	6.70 (8%)	552
SINGIDA	609.60	602.00 [99%]	199.00 (33%)	403.00 (67%)	7.60 [1%]	0 (0%)	0 (0%)	7.60 (100%)	893
TABORA	557.10	550.70 [99%]	270.70 (49%)	280.00 (51%)	6.40 [1%]	0 (0%)	1.50 (23%)	4.90 (77%)	902
TANGA	342.80	139.00 [41%]	0 (0%)	139.00 (100%)	203.80 [59%]	136.80 (67%)	53.00 (26%)	14.00 (7%)	865
TOTAL	10,129.32	6,668.40 [66%]	3,048.20 (46%)	3,620.20 (54%)	3,460.92 [34%]	1,857.97 (54%)	864.72 (25%)	738.23 (21%)	17,757

Note: 1) (%) is percentage shearing in SUB TOTAL.
2) [%] is percentage shearing in TOTAL LENGTH OF TRUNK ROAD.
3) Definitions on "GOOD", "FAIR" and "POOR" are referred to in the text.

Table 6-3 PARTICULARS OF REGIONS

Region	Population (x 1000) 1988	Land Area (Km^2)	Population Density (Prs/Km^2)	Trunk Roads (Km)						Core Region	Corridor	Agricultural Key Region	Rank
				Length (Paved & Unpaved)	Paved Trunk Roads								
					Nov. 1992		by the End of 1993						
					Total Length	in Good Condition	Newly Paved	Resealed	in Good Condition				
ARUSHA	1,352	82,306	16	542.8	262.0	171.8	0.0	0.0	171.8		NTHE		B
COAST	638	32,407	20	433.5	345.9	170.8	29.0	0.0	199.8		TNZM		A
DSM	1,360	1,393	977	56.8	56.8	26.8	0.0	0.0	26.8				B
DODOMA	1,238	41,311	30	598.1	152.7	152.2	0.0	0.0	152.2		CTRL		A
IRINGA	1,209	56,864	21	710.0	390.4	177.2	0.0	144.7	321.9	CORE	TNZM	K	A
KAGERA	1,326	28,388	47	713.6	174.0	136.5	0.0	4.9	141.4	(CORE)	CTRL	K	B
KIGOMA	855	37,037	23	423.8	8.6	0.0	8.6	0.0	8.6				
KILIMANJARO	1,109	13,309	83	399.9	227.0	80.0	0.0	0.0	80.0	CORE	NTHE	K	A
LINDI	646	66,046	10	345.5	118.6	48.1	0.0	0.0	48.1	CORE			B
MARA	971	19,566	50	351.8	87.0	87.0	0.0	0.0	87.0		LAKE		B
MBEYA	1,476	60,350	25	764.1	363.1	122.0	0.0	167.9	289.9	CORE	TNZM	K	A
MOROGORO	1,223	70,799	23	560.0	382.0	129.4	0.0	147.3	276.7	CORE	TNZM		A
MTWARA	889	16,707	53	204.4	102.9	25.7	0.0	0.0	25.7	CORE			B
MWANZA	1,878	19,592	96	403.1	161.9	107.1	0.0	0.0	107.1	(CORE)	CTRL	K	B
RUKWA	695	68,635	10	834.5	2.0	0.5	0.0	0.0	0.5				
RUVUMA	783	63,498	12	855.0	314.0	200.5	0.0	0.0	200.5	CORE		K	B
SHINYANGA	1,773	50,781	35	418.9	90.2	81.5	88.0	0.0	169.5	(CORE)	CTRL	K	A
SINGIDA	792	49,341	16	609.6	7.6	0.0	0.0	0.0	0.0		CTRL		
TABORA	1,036	72,151	14	557.1	6.4	0.0	0.0	0.0	0.0		CTRL		
TANGA	1,284	26,808	48	342.8	203.8	136.8	0.0	67.0	203.8	CORE	NTHE		A
TOTAL	22,533	877,289	26	10,125.3	3,456.9	1,853.9	125.6	531.8	2,511.3				

Table 6-4 ROUTINE MAINTENANCE BUDGET

FY 1992/93 ROUTINE MAINTENANCE BUDGET

REGION	NETWORK LENGTH	TRUNK ROADS FULL MTC LENGTH	TRUNK ROADS AMOUNT	RURAL ROADS FULL MTC LENGTH	RURAL ROADS AMOUNT	OFFC ADM REOs	TOTAL
DSM HQTS			15,000,000		40,000,000		55,000,000
ARUSHA	1,823	175	104,272,000	438	75,934,000	4,551,323	184,757,761
COAST	1,145	103	62,793,000	292	59,211,000	3,358,620	125,362,912
DSM	698	89	91,908,000	155	49,415,000	2,217,669	143,540,824
DODOMA	1,243	230	95,559,000	290	49,672,000	3,103,288	148,334,578
IRINGA	2,161	221	107,792,000	625	96,234,000	5,395,178	209,421,803
KAGERA	1,935	295	106,671,000	507	79,522,000	4,830,944	191,024,451
KIGOMA	1,046	259	54,566,000	285	50,066,000	3,111,456	107,743,741
K'MANJARO	935	160	84,478,000	400	83,592,000	2,334,332	170,404,732
LINDI	956	165	72,315,000	274	89,443,000	2,366,761	164,145,035
MARA	1,011	186	76,790,000	365	58,903,000	3,024,074	138,717,439
MBEYA	2,504	161	60,190,000	1230	168,950,000	4,451,245	233,592,475
MOROGORO	1,639	142	86,410,000	600	87,929,000	3,591,947	177,931,547
MWANZA	1,467	101	83,356,000	570	87,909,000	3,662,529	174,926,099
MTWARA	821	105	70,080,000	300	98,947,000	2,049,718	171,077,098
RUKWA	1,814	317	65,350,000	417	71,710,000	4,528,654	141,589,271
RUVUMA	1,773	255	127,464,000	365	69,680,000	4,426,493	201,570,856
SHINYANGA	850	136	68,920,000	360	59,256,000	2,622,120	130,798,480
SINGIDA	1,485	277	64,778,000	365	61,355,000	3,707,468	129,840,833
TABORA	1,445	277	63,159,000	368	62,602,000	3,607,604	129,368,972
TANGA	1,217	105	98,088,000	865	145,302,000	3,038,376	246,429,241
Total	28,038	3,759	1,659,939,000	9,151	1,645,632,000	70,000,000	3,375,580,151

note

1. Tanga and Mbeya Regions have an additional 75mil/= each for RSP (NORAD)

2. Kilimanjaro Region has an additional 30mil/= for GTZ's mtce programme

3. Iringa and Ruvuma Regions have an additional 1.5mil/= each for ODA TAs

4. Mtwara Region has an additional 25mil/= for FINNIDA mtce programme.

5. Lindi Region has an additional 31mil/= for FINNIDA mtce programme.

6. Shinyanga and Mwanza Regions have an additional 1mil/= each for IDA TAs

7. Kagera Region has an additional 1mil/= for UNDP TAs

8. Morogoro Region has an additional 130mil/= for SDC programme (MORRP), and 30mil/= for IDC programme.

9. Tanga Region has an additional 8.0mil/= for maintenance of Chalinze-Manga sect.(90kms) which is in Coast Region (DANIDA prog.)

MINISTRY OF WORKS

ROADS AND AERODROMMES DIVISION

SUMMARY OF ROAD MAINTENANCE BUDGET RQUIREMENTS FOR FY 1992/93

ROAD TYPE	ROUTINE KM	ROUTINE AMOUNT	PERIODIC KM	PERIODIC AMOUNT	EMMERGENCY KM	EMMERGENCY AMOUNT	TOTAL
Trunk & DSM Rds	3,759	1,659,939,000	436	2,342,100,000	–	100,000,000	4,102,039,000
Rural Roads	9,151	1,645,632,000	399	1,246,800,000	–	100,000,000	2,992,432,000
Bridges							255,000,000
Admin. Costs		70,000,000					70,000,000
TOTAL AMOUNT	12,910	3,375,571,000	835	3,588,900,000		200,000,000	7,419,471,000

QUARTERLY ACTION PLAN FOR ROUTINE MAINTENANCE OF ROADS

REGION:..... TRUNK ROADS / RURAL ROADS FROM DATE.....TO DATE.....

PREPARED BY:.....

APPROVED BY:.....

ACTIVITY	PLANNED FOR THIS PERIOD: DAILY WORKDAYS	DAILY PRODUCTION	OUTPUT UNITS	DAILY TOTAL STD. COST	TOTAL STD. COST
1 ROUTINE MAINTENANCE					
100 EARTH ROAD SURFACE MAINTENANCE					
101 Earth roadway repair			md		
104 Reshaping earth roadway			km		
105 a) Grading earth roadway, motor grader			km		
105 b) Grading earth roadway, towed grader			km		
109 Other earth road maintenance			km		
TOTAL 100					
110 GRAVEL ROAD SURFACE MAINTENANCE					
111 Gravel road surface repair			md		
112 Gravel road pothole patching			m3		
113 Spot replacement of gravel road surface			m3		
114 Reshaping of gravel roads			km		
115 a) Grading of gravel roads, motor grader			km		
115 b) Grading of gravel roads, towed grader			km		
119 Other gravel road surface maintenance			md		
TOTAL 110					
120 BITUMINOUS ROADS SURFACE MAINTENANCE					
121 Pothole patching with premix			m3		
122 Pothole patching with aggregate			m3		
123 Filling cracks			lm		
124 Spot bituminous surface repair			m2		
129 Other bituminous road maintenance			md		
TOTAL 120					
130 UNPAVED SHOULDER MAINTENANCE					
131 Unpaved shoulder repair			lm		
132 Replacement of shoulder surface			m3		
133 Reshaping unpaved shoulders			km		
139 Other shoulder maintenance			md		
TOTAL 130					

QUARTERLY PROGRESS REPORT FOR ROUTINE MAINTENANCE OF ROADS

REGION:..... TRUNK ROADS / RURAL ROADS FROM DATE:..... TO DATE:.....

PREPARED BY:.....
APPROVED BY:.....

ACTIVITY	FEATURE INVENTORY QTY	UNIT	A/P *	OUTPUT THIS QTR	OUTPUT TO DATE	OUTPUT ANNUAL PLAN	OUTPUT UNITS	STANDARD COSTS (Tsh '000) THIS QTR.	STANDARD COSTS (Tsh '000) TO DATE	STANDARD COSTS (Tsh '000) ANNUAL PLAN
1 ROUTINE MAINTENANCE										
100 EARTH ROAD SURFACE MAINTENANCE										
101 Earth roadway repair		km	A				md			
			P							
104 Reshaping earth roadway		km	A				km			
			P							
105 a) Grading earth roadway, motor grader		km	A				km			
			P							
105 b) Grading earth roadway, towed grader		km	A				km			
			P							
109 Other earth road maintenance		km	A				km			
			P							
TOTAL 100			A							
			P							
110 GRAVEL ROAD SURFACE MAINTENANCE										
111 Gravel road surface repair		km	A				md			
			P							
112 Gravel road pothole patching		km	A				m3			
			P							
113 Spot replacement of gravel road surface		km	A				m3			
			P							
114 Reshaping of gravel roads		km	A				km			
			P							
115 a) Grading of gravel roads, motor grader		km	A				km			
			P							
115 b) Grading of gravel roads, towed grader		km	A				km			
			P							
119 Other gravel road surface maintenance		km	A				md			
			P							
TOTAL 110			A							
			P							

Table 6-6 LIST OF HAND TOOLS

HAND TOOLS (1/2)

LARGE BOX

DESCRIPTION		
Socket (12.7mm sq. drive)	Hexagon	10, 12, 13, 14
	Dodecagon	17, 19, 21, 22, 23, 24, 26, 27, 30, 32
Handle (12.7mm sq. drive)	Ratchet Handle (371) Extension Bar (321)	
Open End Wrench (Double Head)	5.5x7, 8x10, 12x14, 13x17, 19x21	
Double Offset Box Wrench	10x12, 11x13, 14x17, 19x21, 22x24, 24x27	
Screw Driver (Plastic Handle)	- 75 - 100 - 150 + No.1 + No.2 +No.3	
Adjustable Wrench	MW-300	
Combination Plier	CP-200	
Water Pump Plier	KWP-250	
Pench	CT-175	
Bolt Clipper	MCS-200	
Ball Peen Hammer	1 pound	
Plastic Hammer	1 pound	
Flat Chisel	19 x 165	
Center Punch	125	
Hexagon Wrench (one set)	2, 2.5, 3, 4, 5, 6, 8, 10	
V type Steel Tool Box	410(width) x 220(length) x 195(height)	

HAND TOOLS (2/2)

SMALL BOX

DESCRIPTION		
Socket (9.5mm sq. drive)	Hexagon	8, 10, 12, 13, 14
	Hexagon (Deep)	8, 10, 12, 13, 14
	Dodecagon	15, 17, 19, 21, 22, 24
Handle (9.5mm sq. drive)	Ratchet Handle (271) Sliding T Handle (220) Extension Bar (306) Universal Joint (B J 30)	
Open End Wrench (Single Head)	10x10, 12x12, 13x13, 14x14, 17x17, 19x19	
Screw Driver (Plastic Handle)	- 75 - 100 + No.1 + No.2	
Adjustable Wrench Combination Plier Radio Pench Black Shaft Hammer Plug Wrench Plug Point Cleaner Hexagon Wrench (long type) Plastic Tool Box	MW-200 CP-200 RP-150 1/2 pound 16 x 18 x 20.6 one set 5, 6, 8, 10 one piece	

JICA