

6.2 Appropriateness of the Project Implementation

The Implementation of the Project for the Road Improvement and Maintenance in Dar es Salaam City, consisting of the Improvement of Road Structures for five packages of roads, in which the improvement measures are consisting Widening of Arterial Roads and Overlay and Reconstruction of Area Roads, and Urgent repair of Pot-holes for the selected roads, is expected to achieve the various social and economic effects described in 6.1.

Total number of population that will benefit directly from the implementation of the Project is estimated to be 540,000 people or 40% of the whole population of Dar es Salaam City(1.3 million). Area that will benefit from the Project would cover the whole urban and unurbanized area of the City.

Despite these positive achievements of the project implementation, however, it will be difficult for the Government of Tanzania to independently implement the whole projects due to financial constraints.

Therefore, the provision of Japanese grant aid for the Project is deemed appropriate. The size and contents of the Project indicated as a result of the Basic Design Study are also deemed appropriate in terms of the project size for Japanese grant aid cooperation and the contents of the original Tanzanian request basically.

From the viewpoints of the existing National Development Plan of Tanzania, the contents requested by Tanzania, the level of improvement, the implementation plan and the maintenance plan, the size and contents of the Project indicated as a result of the Basic Design Study are also deemed appropriate.

APPENDICES

- 1.1 Organization of Basic Design Study Team
- 1.2 Itinerary of the Study
- 1.3 Minutes of Discussions on the Draft Final Report
- 1.4 Data and Information obtained
- 4.1 Layout Plan of Ilala Road Maintenance Office
- 5.1 Summary of PSI Survey
- 5.2 Calculation of Required Thickness of Pavement
- 5.3 Designed Pavement Thickness
- 5.4 Alternative Study on Pedestrian Bridge
at Manzese (1)-(2)
- 5.5 Basic Design Drawings (1)-(5)
- 5.6 Unit Quantities of Each Improvement Measures
- 5.7 Proposed Quarry Sites and Borrow Pits
- 5.8 Unit Costs of Materials
- 5.9 Unit Costs of Equipment
- 5.10 Unit Costs of Labour

Appendix 1.1 Organization of Basic Design Study Team

Members of the Basic Design Study Team and their assignments are listed as follows:

Mr. Kotarou NAGASAWA
Team Leader,
Road Division,
Chubu Regional Construction Bureau,
Ministry of Construction

Mr. Satoshi ABE
Grant-aid Programme
Grant Aid Division,
Economic Cooperation Bureau,
Ministry of Foreign Affairs

Mr. Hirokazu ITO
Road Improvement Plan,
Japan Engineering Consultants Co., Ltd.

Mr. Hiroki SHINKAI
Facility Design,
Nippon Koei Co., Ltd.

Mr. Hisashi MOTO
Construction Plan and Cost Estimate,
Japan Engineering Consultants Co., Ltd.

Appendix 1.2 Itinerary of the Study

Itinerary of the Suvery in Tanzania for Basic Design Study on Dar es Salaam City Road Improvement

<u>Date</u>	<u>Events</u>
Dec. 5(Wed):	-Arrive in Dar es Salaam by LH-580(7:55 AM) -Visit DCC and Discuss the schedule of the Mission -Visit Planning Commision and Ministry of Works (MOW) -Visit JICA and Embassy of Japan(EOJ)
6(Thu):	-Submit the Basic Design Report(Draft) and make a brief explanation to DCC and other agencies (1st Joint Meeting at Karimjee Hall)
7(Fri):	-Vist UNDP -2nd Joint Meeting at Karimjee Hall
8(Sat):	-Site survey
9(Sun):	-Holiday
10(Mon):	-Preparation of Draft Minutes 14:00: -Joint Meeting between DCC, MOW, Ministry of Finance(MOF), Planning Commission and Mission at Planning Commision
11(Tue)	9:00: -S ighning of Minutes at Planning Commission 11:00: -Visit MOW 14:00: -Report to EOJ and JICA
12(Wed):	-Leave of the Gov. Officials by LH-581(9:25AM) -Field Survey and Data Collection
13(Thu):	-Field Survey and Data Collection
14(Fri):	-Field Survey and Data Collection
15(Sat):	-Field Survey and Data Collection
16(Sun):	-Holiday
17(Mon):	-Preparation of Survey Reports, if necessary
18(Tue):	-Report the result to DCC, EOJ and JICA
19(Wed):	-Leaving Dar se Salaam by LH 581(9:25 AM)

Concerned Personnel

(1) Tanzanian Side

- Dar es Salaam City Council

1. Mr. S. D. T. Mayeye City Director
2. Mr. P. S. Kamwela City Economist
3. Mr. A. C. Masenha City Engineer
4. Mr. D. R. Kibaha Deputy City Engineer
5. Mr. P. Gasinzigwa Road Engineer

- Planning Commission

1. Mr. R. Mhagama Deputy Permanent Secretary
2. Mr. T. E. I. Kimolo Director of Economic Services
3. Mr. R. N. Mlulwa Director of External Sector
4. Mr. E. E. Mshanga Assistant Director

- Ministry of Finance

1. Mr. P. J. Mbena Officer in charge

- Ministry of Regional Administration and Local Government

1. Mr. R. M. Nzowa Planning Officer

- Ministry of Works

1. Mr. I. N. Kimambo Commissioner of Const. and Maint.
2. Mr. F. Barozi Chief Engineer, Construction
3. Mr. J. L. Ngumbulu Senior Engineer, Design
4. Mr. A. M. Kimaro Engineer

(2) Japanese Side

- Japanese Embassy

1. Mr. S. Nagai Ambassador
2. Mr. M. Imai Acting Ambassador
3. Mr. M. Kaneko 1st Secretary

- JICA Tanzania Office


1. Mr. M. Kumomi Resident Representative
2. Mr. Tsutsui Deputy Representative
3. Mr. H. Motomura Officer in charge

- JICA Expert to MOW


1. Mr. Motosaku Road Construction
2. Mr. M. Kobota Road Construction
3. Mr. K. Mandai Road Improvement

THE MINUTES OF DISCUSSIONS
ON
THE DRAFT FINAL REPORT
OF
THE BASIC DESIGN STUDY
ON
THE PROJECT
FOR
ROAD IMPROVEMENT AND MAINTENANCE
IN
DAR ES SALAAM
IN
THE UNITED REPUBLIC OF TANZANIA

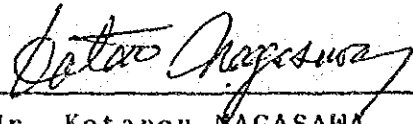
AGREED UPON BETWEEN
DAR ES SALAAM CITY COUNCIL
AND THE JAPAN INTERNATIONAL COOPERATION AGENCY
ON
11th OF DECEMBER, 1990



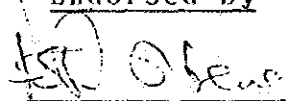
Mr. Sigit D. T. R. Mayeye
City Director,
Dar es Salaam City Council



Mr. I. N. Kimambo
Commissioner for Construction
and Maintenance,
Ministry of Works (MOW)



Mr. Kotarou NAGASAWA
Leader of the Basic Design
Study Team,
The Japan International
Cooperation Agency (JICA)

Endorsed by


Mr. P. J. Mbena
Finance Management Officer,
External Finance,
Ministry of Finance

The Basic Design Study
on
the project
for
Road Improvement and Maintenance
in
Dar es Salaam

Minutes of Discussions for Draft Final Report

Date : December 11, 1990
Place : Conference Room of Planning
Commission

In response to the request of the Government of the United Republic of Tanzania (hereinafter referred to as the Government), the Government of Japan decided to conduct a Basic Design Study on the Project for Road Improvement and Maintenance in Dar es Salaam (hereinafter referred to as the Project), and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as JICA which is an official agency implementing the economic cooperation of the Government of Japan). JICA has prepared a Draft final Report on the Basic Design Study and sent the Study Team headed by Mr. Kotarou NAGASAWA, Chief of Road Survey, Road Division, Chubu Regional Construction Bureau, Ministry of Construction, to the United Republic of Tanzania from December 3, 1990 to December 21, 1990.

The team had a series of discussions on the Draft Final Report and The Government of Tanzania has agreed and accepted in principle the components of the Report.

The major points of understanding reached between them as shown below.

1. TITLE OF THE PROJECT

The title of the Project is the "Road Improvement and Maintenance in Dar es Salaam".

2. OBJECTIVES OF THE PROJECT

The objectives of the Project are to improve existing road structures by overlay, reconstruction and widening to maintain the function of the road network in Dar es Salaam City.

3. EXECUTING AGENCY

The executing agency of the Project is the Dar es Salaam City Council(DCC).

4. THE PROJECT

The Project consists of three categories of improvement measures, namely Category A "Improvement of Road Structures", Category B "Urgent Repair of Selected Roads" and Category C "Improvement of Road Maintenance". Category A is further divided into five (5) contract packages as shown below: (Project Location Map is attached in Appendix 1)

(1) Category A "Improvement of Road Structures" (86.3 km in total)

- Lot No. A-1: New Bagamoyo/Upanga Roads (9.8 km)
- Lot No. A-2: Morogoro Road (5.7 km)
- Lot No. A-3: Chan'gombe Area Road (19.2 km)
- Lot No. A-4: Kariakoo Area Road (31.6 km)
- Lot No. A-5: Central Area Road (20.0 km)

(2) Category B "Urgent Repair of the Following Three(3) Roads"

- Lot No. B-1: Morocco, Kinondoni and Mwinjuma Roads

(3) Category C "Improvement of Road Maintenance System"

- Lot No. C-1: Provision of Equipment (Sum)

SM

GM

Note:

- (1) The roads to be improved are subject to the result of cost review on the feasibility study report as well as the conditions of Japan's Grant Aid Programme. The final figure of the road to be improved will be presented in the Final Report of the Basic Design Study which is scheduled to be submitted at the end of March, 1991.
- (2) Reconstruction of pavement of New Bagamoyo Road beyond Morocco Road shall be designed taking into consideration the possible future planning of dual carriageway.
- (3) Necessary and appropriate equipment to be provided under Category C shall be determined by the Team on the result of the Basic Design Study.

5. IMPLEMENTATION SCHEDULE OF THE PROJECT

The Project will be implemented in line with the procedure and conditions of Japan's Grant Aid System. The tentative implementation schedule is presented in Appendix 2.

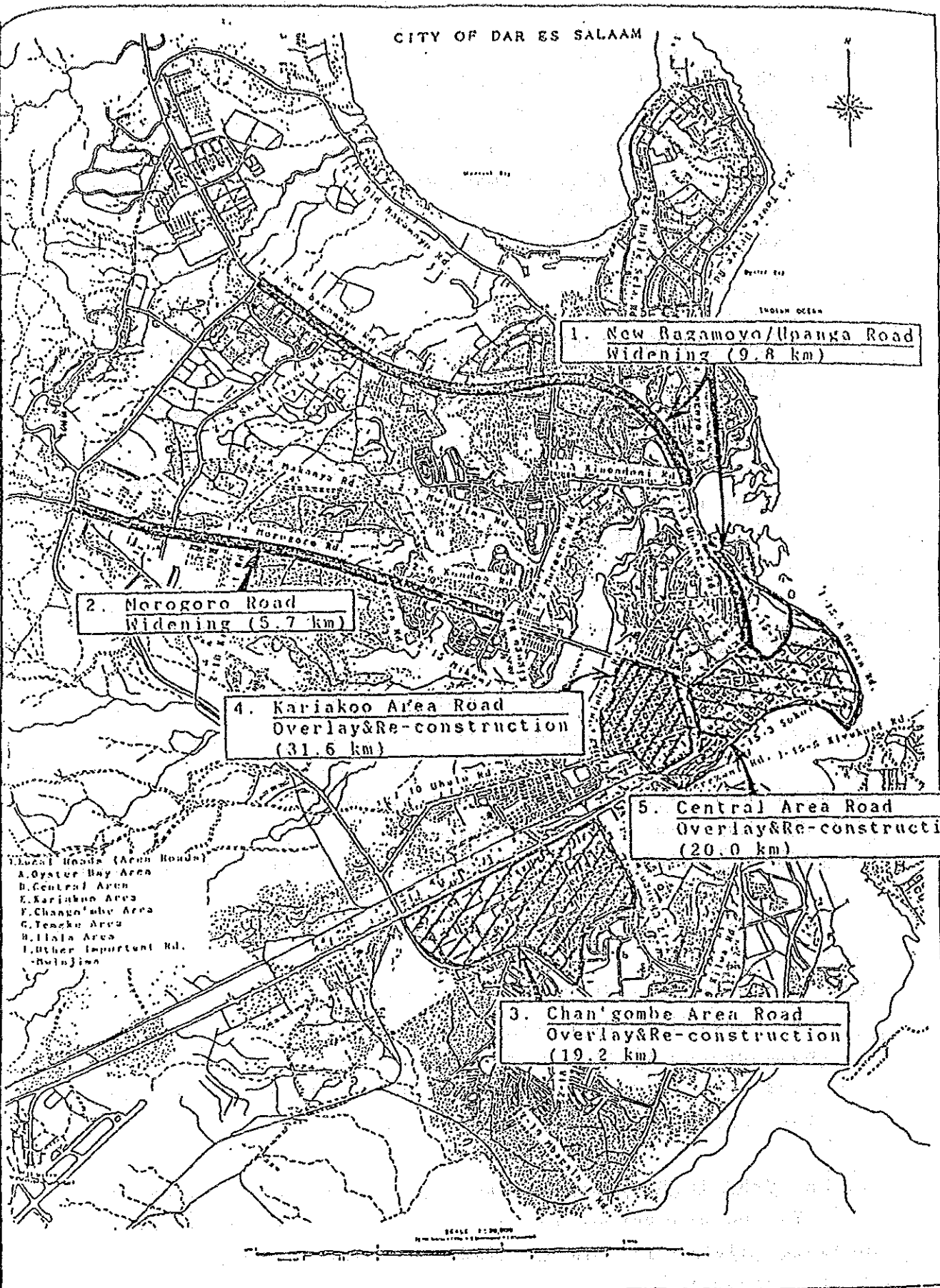
6. SYSTEM OF JAPAN'S GRANT AID PROGRAMME

- (1) The Tanzania side has understood the Japan's Grant Aid System, which include the principle for use of Japanese consulting firm(s) and a Japanese general contractor and /or firm for the implementation of the Project.
- (2) The Tanzania side will ensure the necessary budget and personnel for the proper and effective operation and maintenance of the requested road structures on condition that the Japan's Grant Aid should be extended to the Project.

7. MEASURES TO BE TAKEN BY THE GOVERNMENT OF TANZANIA

The Government of Tanzania will take the necessary measures listed in Appendix 3 for the smooth implementation of the Project.

CITY OF DAR ES SALAAM



2. Morogoro Road
Widening (5.7 km)

1. New Bazamoyo/Upanga Road
Widening (9.8 km)

4. Kariakoo Area Road
Overlay & Re-construction
(31.6 km)

5. Central Area Road
Overlay & Re-construction
(20.0 km)

3. Chan'gombe Area Road
Overlay & Re-construction
(19.2 km)

Local Roads (Area Boundaries)
A. Oyster Bay Area
B. Central Area
C. Kariakoo Area
D. Chan'gombe Area
E. Teesko Area
F. Ilala Area
G. Other Important Rd.
H. Rufiji

Appendix 1: Location Map of the Project

COM

Appendix 2 Tentative Implementation Programme

Improvement Measures	Calender Year			
	1st	2nd	3rd	4th
1. Pre-construction Stage (Detailed Design/Tendering)				
2. Construction Stage:				
- Category A: Road Improvement				
(1) New Bagamoyo/Upanga Rd (9.8km)				
(2) Morogoro Road (5.7km)				
(3) Chan'gombe Area Road (19.2km)				
(4) Kariakoo Area Road (31.6km)				
(5) Central Area Road (20.0km)				
Total (86.3km)				
- Category B: Urgent Repair of Selected Roads				
(1) Morocco, Kinondoni and Mwijuma				
- Category C: Improvement of Road Maintenance System				
(1) Provision of Equipment Sum				

Note:

/1; The roads to be improved are subject to the result of cost review on feasibility study as well as the conditions of Japan's grant aid programme.

/2; Necessary and appropriate equipment to be provided under Category C shall be determined by the Team on the result of the Basic Design Study.

Appendix 3: Necessary Measures to be taken by the Government
of Tanzania

1. To provide data and information necessary for detailed design of the Project.
2. To secure, clear, level and reclaim land acquisition and house compensation necessary for the execution of the Project prior to commencement of construction by the contractor and thereby report to the Japanese side.
3. To relocate and/or to protect the existing public utilities, such as telephone cable, electric pole and wire, water main etc and thereby report to the Japanese side.
4. To ensure prompt unloading, custom clearance and internal transportation of imported materials, equipments and vehicles for the execution of works at the port of disembarkation in Tanzania.
5. To exempt any equipment, materials and supplies brought into and/or purchased in Tanzania in connection with the implementation of the project from any tax, duties and levies which are imposed in Tanzania.
6. To exempt Japanese nationals engaged in the Project from custom duties, internal taxes and other fisical levies which may be imposed in Tanzania with respect to the supply of the products and services under the verified contracts.
7. To accord Japanese nationals whose services may be required in connection with the supply of products and services under the verified contracts the visas, permissions and licences necessary for their entry into Tanzania and stay therein and for performance of their works.

8. To bear all commissions to the Japanese foreign exchange bank for the banking services based on the Banking Arrangement(B/A), in accordance with Japan's Grant Aid procedure.
9. To bear all expenses necessary, other than those to be born by the Grant Aid, in connection with the implementation of the Project.
10. To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid.

Appendix 1.4 Data and Information obtained

1.4.1 Questionnaire for Basic Design Study and its' Answers

Basic Design Study
on
Road Improvement and Maintenance in Dar es Salaam

Main objectives of the Basic Design Study are to confirm the following subjects which have been prepared on the basis of the Basic Design Study Report, through discussion between the Team and the Government of Tanzania and/or agencies concerned:

1. To confirm the priority project to be implemented under this Project. The following is the improvement measures proposed by the Government of Japan to be implemented in this Project. (See Appendix 1)

- Category A: Improvement of Road Structures

Lot No. A-1: New Bagamoyo/Upanga Road	L= 9.8 km
Lot No. A-2: Morogoro Road	L= 5.7 km
Lot No. A-3: Chan'gombe Area Road	L=19.2 km/*
Lot No. A-4: Kariakoo Area Road	L=31.6 km/*
Lot No. A-5: Central Area Road	L=20.0 km/*
Total L=86.3 km	

- Category B: Urgent Repair of Pot-holes

Lot No. B-1: Urgent Repair of Pot-holes for Selected Road	
Total L=204 km approx.	

Note:

- (1) The road length of the Area Road is subject to the result of cost review as well as the conditions of the Japan's grant aid system.
- (2) The following two(2) items of improvement measures proposed in the feasibility study were excluded from the scope of this Project in view of relatively low significance and lack of satisfaction of prerequisites respectively.
 - Improvement of Muwinjuma Area Road proposed in Category A.
 - Improvement of Maintenance System in Category C

2. To confirm the tentative Implementation Schedule proposed by the Team which has been made taking account of the conditions of Japan's grant aid programme. (See Appendix 2)
3. To confirm the government of Tanzania to allocate the necessary local budget required for the implementation of Project.
4. To confirm the establishment of the Project Office in charge and the executing agency responsible for this Project and its organization.
5. To confirm the government of Tanzanian, at his own cost, to remove and relocate the existing utilities and houses, if any, such as, water mains, telephone cable and line, electric line and street column.
6. To confirm the government of Tanzania to compensate the cost required for land acquisition and removal of the existing buildings and houses which might be affected by the construction of Project. It is noted that there are temporary huts and sheds illegally build within the road reserve along the Morogoro Road, so that they must be demolished before starting the construction of the Project.
7. To confirm the undertakings of the government of Tanzania for the implementation of the Project. (See Appendix 3)
8. To explain the Japanese Grant Aid Programme and System to Tanzanian Government in connection with the procurement of Japanese consultant's firm and Japanese general contractor for the implementation of the Project.

Collection of Data and Information
Required for Basic Design Study

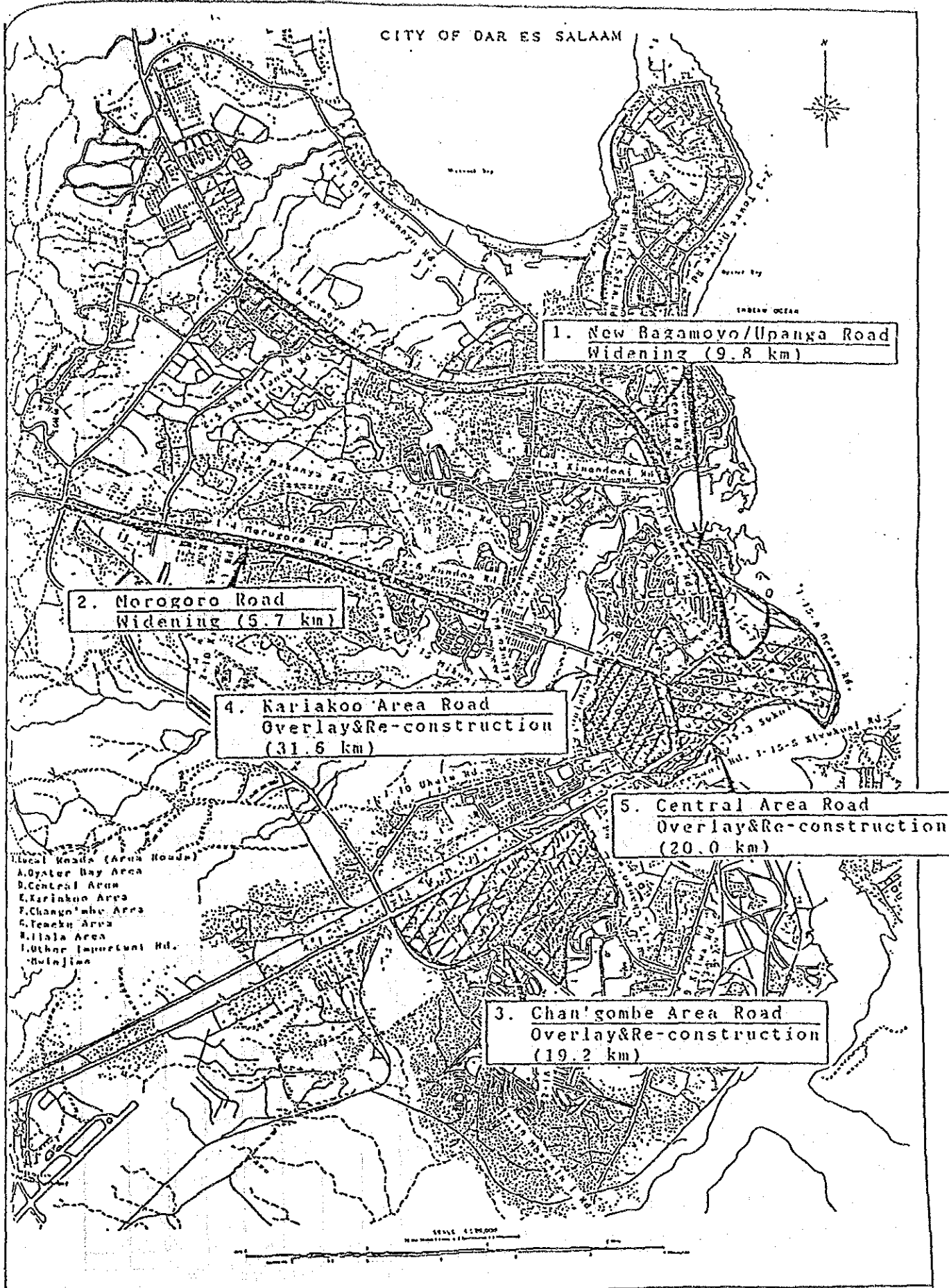
The Team request the government of Tanzania to provide the following data and information which will be utilized for review of the feasibility study made by JICA in March, 1989 through July, 1990.

1. To collect the current price data required for review of cost estimate taking into account the devaluation of the Tanzanian Shillings on December, 1989.
 - Materials cost: fuel and oil, fine and coarse aggregates, cement, timber, plywood, concrete pipe, coral stone, etc.
 - Labour cost : forman, mechanic, operator driver, skilled labour, common labour, etc.

2. To collect information and detailed drawings of the existing public utilities and houses, which might be affected by the construction the Project.
 - (1) Location, Dimension and Length of Public Utilities along New Bagamoyo, Upanga and Morogoro roads:
 - Water mains
 - Telephone cable
 - Electric line and column
 - Street Lighting Column
 - Street trees

 - (2) Location, Dimension and Numbers of Building and Houses along Morogoro Road
 - Type A (house built of concrete)
 - Type B (house built of bricks)

3. To collect the latest information in connection with the new infrastructures projects to be implemented in the near future, which might be affected by the construction of the Project:
 - (1) Improvement of Tele-communication System in Dar es Salaam
 - (2) Improvement of Water Supply System in Dar es Salaam



Appendix 1: Location Map of the Project

Appendix 2 Tentative Implementation Programme

Improvement Measures	Calendar Year			
	1st	2nd	3rd	4th
1. Pre-construction Stage (Detailed Design/Tendering)				
2. Construction Stage:				
Category A: Road Improvement				
(1) New Bagamoyo/Upanga Rd (9.8km)				
(2) Morogoro Road (5.7km)				
(3) Chan'gombe Area Road (19.2km)				
(4) Kariakoo Area Road (31.6km)				
(5) Central Area Road (20.0km)				
Total (86.3km)				
- Category B: Urgent Repair of Pot-holes (204 km)				

Tentative Detailed Schedule of Pre-construction Stage
(Just as an example)

Item	Months							
	1	2	3	4	5	6	7	8
Exchange of Note (E/N)	V							
Signing of Consultancy Services	V							
Detailed Design/Preparation of Tender Documents		—						
Public Announcement/Prequalification				—				
Tendering, Evaluation & Construction Contract					—			
Award of Construction Contract							V	
Mobilization of Contractor								

Appendix 3: Necessary Measures to be taken by the Government
of Tanzania

1. To provide data and information necessary for detailed design of the Project.
2. To secure, clear, level and reclaim land acquisition and house compensation necessary for the execution of the Project prior to commencement of construction by the contractor and thereby report to the Japanese side.
3. To relocate and/or to protect the existing public utilities, such as telephone cable, electric pole and wire, water main etc and thereby report to the Japanese side.
4. To ensure prompt unloading, custom clearance and internal transportation of imported materials, equipments and vehicles for the execution of works at the port of disembarkation in Tanzania.
5. To exempt any equipments, materials and supplies brought into and/or purchased in Tanzania in connection with the performance of the works from any tax, duties and levies which are imposed in Tanzania.
6. To exempt Japanese nationals engaged in the Project from custom duties, internal taxes and other fisical levies which may be imposed in Tanzania with respect to the supply of the products and services under the verrified contracts.
7. To accord Japanese nationals whose services may be required in connection with the supply of products and services under the verified contracts the visas, permissions and licences necessary for their entry into Tanzania and stay therein and for performance of their works.
8. To bear all commissions to the Japanese foreign exchange bank for the banking servuces based on the Banking

Arrangement (B/A), in accordance with Japan's Grant Aid procedure.

9. To bear all expenses necessary, other than those to be borne by the Grant Aid, in connection with the implementation of the Project.
10. To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid.

ANSWERS TO THE ITEMS OF THE QUESTIONNAIRE
FOR THE BASIC DESIGN STUDY FOR ROAD IMPROVEMENT
AND MAINTENANCE IN DAR ES SALAAM, SUBMITTED BY
DAR ES SALAAM CITY COUNCIL.

Item. No.	R e p l y.
1	Confirmed but with reservations on category A and C of the improvement measures as explained in the comments/remarks on the Basic Design Study Report (DRAFT FINAL REPORT-SUMMARY) submitted to the Basic Design Study Team.
2	Confirmed
3	Confirmed
4	Confirmed
5	Confirmed
6	Confirmed
7	All items in Appendix 3 confirmed.
8	Confirmed

Shayya
CITY DIRECTOR

1.4.2 Government Notice for Petrol Products
Road Maintenance Levy

GOVERNMENT NOTICE NO. PUBLISHED ON

THE LOCAL GOVERNMENT FINANCE ACT, 1982
(NO. 9 OF 1982)

BY - LAWS

Made Under Section 6 (1) (0) and 15 (1)

THE DAR ES SALAAM CITY COUNCIL (PETROL PRODUCTS ROAD MAINTAINANCE LEVY) BY-LAWS 1990

Citation.
Commencement

1. These By-Laws may be cited as the Dar es Salaam City Council (Petroleum Products Road Maintenance Levy) By-Laws, 1990 and shall be deemed to have come into operation on the 1st day of August, 1990.

2. These By-Laws shall apply to the whole of the area of jurisdiction of the Dar es Salaam City Council.

- Inter-
pretation

3. In these By-Laws:-

"The Council" means the Dar es Salaam City Council.

"Levy" means the Petroleum Products Road Maintenance.

"Levy Collector" means the owner or operator of a petroleum products depot or warehouse.

"Petroleum Products" means petrol, and diesel.

"Buyer" means any person buying any specified Petroleum Product.

"Authorised Officer " means any officer of the Council duly authorised by the City Director to administer these By-Laws.

"Monthly returns" means the reports and records of the quantity of petroleum products received, sold or distributed and the balance thereof within the month,

Levy

4. There shall be levied and collected from every buyer of petroleum products road maintenance levy on the petroleum product specified in column one of the schedule to these By-Laws, which is sold and bought within the area of jurisdiction of the Council at the rate specified in column two of the schedule opposite to the petroleum products specified.

5. (1) The levy shall become due and payable by the buyer to the Council at the time of sale, and every levy collector shall receive the levy for and on behalf of the Council.

(2) Every levy collector shall prepare appropriate monthly returns and shall within twenty one days after the end of every calendar month:-

(a) remit to the Council the levy collected within that calendar month.

(b) submit to the City Director or the authorised officer the monthly returns.

Inspection
of records

6. The authorised officer may enter into the premises of the levy collector and inspect invoices, cash sales, account books, records and other like documents of the levy collector and take copies thereof for the purpose of verifying the amount collected under these By-Laws.

Offence

7. (1) Any person who refuses, neglects or fails to pay the levy which is due and payable by him under these By-Laws,

neglects or fails to remit the levy or submit the monthly returns in the manner or within the time prescribed under clause 5 of these By-Laws shall be guilty of an offence.

Unremitted.
rate

8. Any levy remittable or payable to the Council shall be a debt due and owing and shall be recoverable against the levy collector as a civil debt and shall accrue an interest at the prevailing commercial bank rate.

Penalty

9. Any person who contravenes, fails and or neglects to comply with the provisions of these By-Laws shall be guilty of an offence and shall be liable on conviction to a fine of five thousand shillings or a term of imprisonment not exceeding twelve months or to both such fine and imprisonment.

SCHEDULE

COLUMN ONE

COLUMN TWO

Petroleum Product

Levy per litre thereof

1, Diesel

1.00 Shilling

2, Petrol

1.00 Shilling

The common Seal of the City Council of Dar es Salaam was here to affixed in pursuance of a resolution passed at a meeting of the said Council duly convened and held on the day of 1990 and the same was so affixed in the presence of:

KITWANI SELEMAN KOMBO
Mayor

S.D.T.R. MAYEYE
CITY DIRECTOR

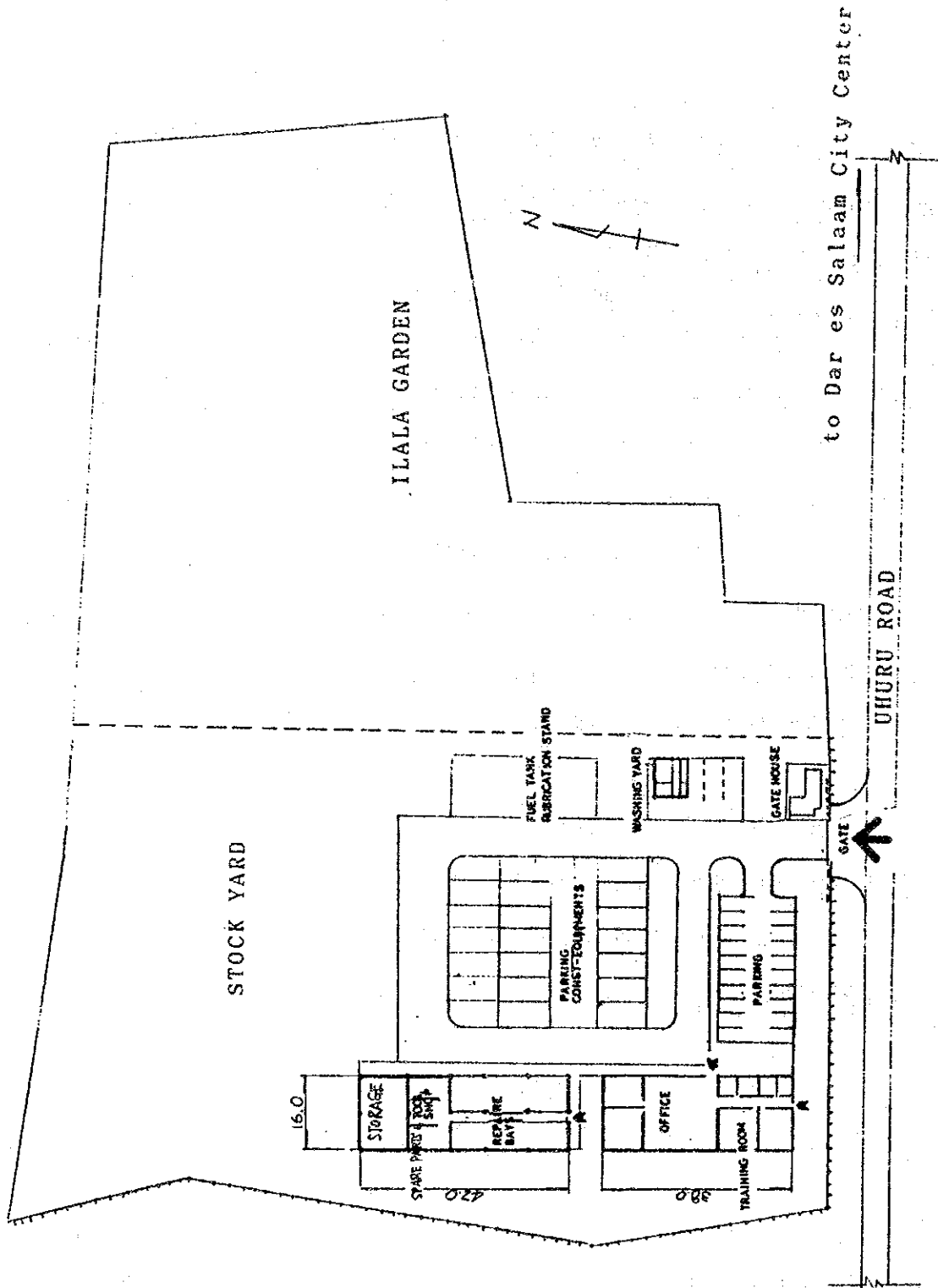
I APPROVE,

AMEA A. BDALLAH
Minister for Local Government
Community Development,
Cooperatives and Marketing

DODOMA

..... 1990

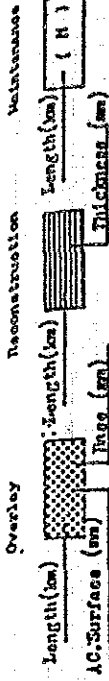
Appendix 4.1 Layout Plan of Ilala Road Maintenance Office



Layout Plan of Ilala Road Maintenance Office

Appendix 5.1 Summary of PSI Survey

Road Section by Countermeasures (1/4)



Link No.	Name of Road	Length (m)	1	2	3	4	5	6	7	8	9	10	11	12	13
Group 1: Arterial Roads															
1-1	Baganoyo Road	35.0	(H)	(H)	(H)	(H)	(H)	(H)	(H)	(H)	(H)	(H)	(H)	(H)	(H)
1-2	Morocco Road	3.5													
1-3	Kluondani Road	1.7	(H)												
1-4	Morogoro Road	33.0	(H)												
1-5	United Nation Road	2.0	(H)												
1-6	U.W.T Road	1.9	(H)												
1-7	Port Access	15.6	(H)												
1-8	Dandari Road	2.2	(H)												
1-9	Kilwa Road	15.7	(H)	(H)	(H)	(H)	(H)	(H)	(H)	(H)	(H)	(H)	(H)	(H)	(H)
1-10	Ishetu Road	5.0	(H)												

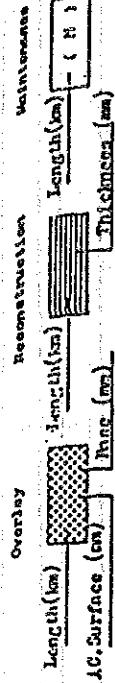
Overlay Reconstruction Maintenance

Road Section by Countermeasures (2/4)



Link No.	Name of Road	Length (km)	Road Section by Countermeasures (2/4)														
			1	2	3	4	5	6	7	8	9	10	11	12	13		
1-11	Mafabasi Road	1.6	(H)														
1-12	Mafabasi Road	3.9															
1-13	Upanga Road	1.0	(H)														
1-14	Tugu Road	17.4				(H)											
1-15	Central Area Streets																
1-15-1	Nauruh Street	0.3															
1-15-2	Sasora Avenue	0.8															
1-15-3	Sokoine Drive	0.8															
1-15-4	Gwanzani Street	1.2															
1-15-5	Kivukoni Front	1.0															
1-15-6	Maktaba and Arikiwe	0.9															
1-15-7	Ohio Street	1.0															
1-15-8	Ocean Road	3.2															
	Total (1)	18.5 km															

Road Section by Countermeasures (3/4)



Dist. No.	Length (km)	1	2	3	4	5	6	7	8	9	10	11	12
2-18	Teseke Street	1.9	(M)										
2-19	Mhargala I Road	1.4	(H)										
2-20	Mhargala II Road	2.2	(H)										
2-21	Mahunda Street	2.0	(H)										
Total		65.5 km											
Group 3: Local Roads (Area Roads Proposed by DCC)													
A	Oyster Bay	6.1											
B	Mwunjuna	(-)											
C	Mozemani	(-)											
D	Central Area	10.3											
E	Korikoko	31.6											
F	Chang'ombe	14.6											
G	Teseke	13.9											
H	Ilala	10.3											
I	Other Important Rd.	4.0											

Study Roads	Total (km)	Overlay (km)	Reconstruction (km)	Maintenance (km)
Arterial Roads	148.5	81.3	14.7	52.5
Collector Roads	65.5	22.3	31.6	11.6
Local Roads	91.2	32.3	50.9	0.0
Total	305.2 km	135.9 km	105.2 km	64.1 km

Study Roads	Total (km)	Overlay (km)	Reconstruction (km)	Maintenance (km)
Arterial Roads	148.5	81.3	14.7	52.5
Collector Roads	65.5	22.3	31.6	11.6
Local Roads	91.2	32.3	50.9	0.0
Total	305.2 km	135.9 km	105.2 km	64.1 km

Overlay Reconstruction Maintenance

Length(km) Length(km) Length(km)

AC Surface (mm) Base (mm) Thickness (mm)

Road Section by Countermeasures (1/4)

Mark No.	Name of Roads	Length (km)	Road Section by Countermeasures (1/4)												
			1	2	3	4	5	6	7	8	9	10	11	12	13
Group 2: Collector Roads															
2-1	Old Baguoyo Road	8.2													
2-2	Halle Sellasie	5.0													
2-3	Toure Drive	5.6													
2-4	Bongoyo Street	0.8													
2-5	Shaklango Road	3.8													
2-6	Kondoa Street	1.2													
2-7	Mwinguwa Road	2.4													
2-8	Kakunya Road	5.0													
2-9	University Road	3.6													
2-10	Kigogo C-1 (to be name)	1.3	(H)												
2-11	Kigogo C-2 to be named	1.8													
2-12	Kigogo C-2 to be named	1.9													
2-13	Old Kigogo Road	6.4													
2-14	Kigera Street	2.0													
2-15	Miyoad Street	1.1													
2-16	New Kigogo Road	2.7													
2-17	Chung'ombe Road	1.0													

Appendix 5.2 Calculation of Required Thickness of Pavement
 Appendix 5.2(1) Initial Daily Traffic (IDT)

Name of Roads	ADT in 1989 Year			Total	Traffic Growth		IDT in 1994 Year			
	Medium Goods	Heavy Goods	Bus		Rate Per Annual		Medium Goods	Heavy Goods	Bus	Total
					Medium/Heavy Goods	Bus				
①	②	③	④=①+②+③	⑤	⑥	⑦=④*(1.0) ^⑤	⑧=④*(1.0) ^⑥	⑨=④*(1.0) ^⑦	⑩=⑦+⑧+⑨	
P-1 Morogoro road										
-Up to Port Ac. J.	1535	234	242	2011	2	10	1695	258	389	2342
P-2 New bagamoyo road										
Upanga road	803	106	232	1141	2	10	887	117	374	1378
-Central area road	31	1	0	32	2	10	34	1	0	35
New bagamoyo road										
-Up to Morocco J.	972	118	140	1230	2	10	1073	130	226	1429
-Beyond Morocco J.	436	55	38	592	2	10	481	61	61	603
P-5 Mwinjima Area Group										
Mwinjima road	315	34	77	426	2	10	348	38	124	510
Mwinjima L-1 road	30	1	0	31	2	10	33	1	0	34
Morocco road	514	72	29	615	2	10	568	79	47	694
Kinondoni road	16	0	99	115	2	10	18	0	160	178
Shekilango road	242	18	7	267	2	10	267	20	12	299
Makanya road	16	0	0	16	2	10	18	0	0	18
P-7 Central Area Group										
Central Area roads	31	1	0	32	2	10	34	1	0	35
Bandari road	944	197	55	1196	2	10	1042	218	89	1349
Nkurumah road	30	1	0	31	2	10	33	1	0	34
Sokoine road	155	19	531	705	2	10	171	21	855	1047
Gerezani road	900	179	78	1157	2	10	994	198	126	1318
Kivukoni road	142	16	78	236	2	10	157	18	126	301
Maktaba road	184	23	0	207	2	10	203	25	0	228
Ohio road	31	1	0	32	2	10	34	1	0	35
Ocean road	30	1	0	31	2	10	33	1	0	34
P-8 Kariakoo Area Group										
Kariakoo Area roads	40	42	0	82	2	10	44	46	0	90
Msinbazi road	645	155	367	1167	2	10	712	171	591	1474
P-9 Chango'mbe Area Group										
Chango'mbe Area roads										
-Factory area roads	77	8	93	183	2	10	85	9	158	252
-Residence area roads	30	1	0	31	2	10	33	1	0	34
Chango'mbe road	1095	54	84	1233	2	10	1209	60	136	1405

Appendix 5.2(3) Effective Thickness of Existing Pavement

Name of Roads	Overlay Length (km)	Existing Pavement Thickness		Conversion Factor		Effective Thickness (Te) (mm)
		Thickness		Surface Base		
		(mm)	(mm)	(mm)	(mm)	
		①	②	③	④	①-②-③-④
P-1 Morogoro road	-	-	-	-	-	-
-Up to Port Ac. J.	-	-	-	-	-	-
P-2 New bagamoyo road	2.30	-	-	-	-	-
Upanga road	-	-	-	-	-	-
-Central area road	0.30	25	250	0.8	0.4	120
New bagamoyo road	-	-	-	-	-	-
-Up to Morocco J.	-	-	-	-	-	-
-Beyond Morocco J.	2.00	120	30	0.8	0.4	110
P-5 Mwinjima Area Group	7.03	-	-	-	-	-
Mwinjima road	0.75	20	100	0.8	0.4	55
Mwinjima L-1	-	-	-	-	-	-
Morocco road	2.78	35	130	0.8	0.4	80
Kinondoni road	-	-	-	-	-	-
Shekilango road	2.00	10	115	0.8	0.4	55
Makanya road	1.50	50	100	0.8	0.4	80
P-7 Central Area Group	17.08	-	-	-	-	-
Central Area roads	6.10	25	250	0.8	0.4	120
Bandari road	2.00	60	120	0.8	0.4	95
Nkurumah road	0.36	25	250	0.8	0.4	120
Sokoine road	0.82	25	250	0.8	0.4	120
Gerezani road	1.39	60	120	0.8	0.4	95
Kivukoni road	1.22	25	250	0.8	0.4	120
Maktaba road	0.93	25	250	0.8	0.4	120
Ohio road	0.96	25	250	0.8	0.4	120
Ocean road	3.30	50	180	0.8	0.4	110
P-8 Kariakoo Area Group	3.70	-	-	-	-	-
Kariakoo area roads	2.02	20	150	0.8	0.4	75
Msinbazi road	1.68	35	250	0.8	0.4	130
P-9 Chango' mbe Area Group	4.78	-	-	-	-	-
Chango' mbe Area roads	-	-	-	-	-	-
-Factory area roads	1.35	25	220	0.8	0.4	110
-Residence area roads	1.66	25	220	0.8	0.4	110
Chango' mbe road	1.77	50	200	0.8	0.4	120

Appendix 5.2(4) Required Thickness of Overlay

Name of Roads	Overlay Length (km)	CBR Val. (%)	DTN in Full-depth Effective Overlay				
			2004 Year	2004 Thick. (Ta)		Effective Thickness	
				in 2004		(Te)	
				(mm)	(mm)	(mm)	(mm)
①	②	③	④	⑤	⑥-④-⑤		
P-1 Morogoro road	-	-	-	-	-	-	
-Up to Port Ac. J.	-	-	-	-	-	-	
P-2 New bagamoyo road	2.30	-	-	-	-	-	
Upanga road	-	-	-	-	-	100	
-Central area road	0.30	8	8	135	120	25	
New bagamoyo road	-	-	-	-	-	-	
-Up to Morocco J.	-	-	-	-	-	-	
-Beyond Morocco J.	2.00	8	284	225	110	100	
P-5 Mwinjima Area Group	7.03	-	-	-	-	-	
Mwinjima road	0.75	10	104	170	55	100	
Mwinjima L-1	-	-	-	-	-	-	
Morocco road	2.78	10	138	175	80	100	
Kinondoni road	-	-	-	-	-	-	
Shekilango road	2.00	6	57	195	55	100	
Makanya road	1.50	8	4	125	80	50	
P-7 Central Area Group	17.08	-	-	-	-	-	
Central Area roads	6.10	8	8	135	120	25	
Bandari road	2.00	8	280	205	95	100	
Nkurumah road	0.36	8	7	135	120	25	
Sokoine road	0.82	8	244	205	120	80	
Gerezani road	1.39	8	273	205	95	100	
Kivukoni road	1.22	8	66	175	120	60	
Maktaba road	0.93	8	44	175	120	60	
Ohio road	0.96	8	8	135	120	25	
Ocean road	3.30	8	7	135	110	25	
P-8 Kariakoo Area Group	3.70	-	-	-	-	-	
Kariakoo area roads	2.02	8	27	160	75	90	
Msinbazi road	1.68	8	327	210	130	80	
P-9 Chango'mbe Area Group	4.78	-	-	-	-	-	
Chango'mbe Area roads	-	-	-	-	-	-	
-Factory area roads	1.35	8	58	175	110	70	
-Residence area roads	1.66	8	7	135	110	25	
Chango'mbe road	1.77	10	257	185	120	70	

Appendix 5.2(5) Required Thickness of Reconstruction

Name of Roads	Reconst- ruction		DTN in Full-depth 2014 Thick (Ta)		Pavement structure of Reconstruction					
	Length (km)	CBR Val. ②	Year ③	in 2014 (mm) ④	Surface (mm) ⑤	Base (mm) ⑥	Subbase (mm) ⑦	Thickness ⑧×1.0⑨ ⑩×1.25		
	①	②	③	④	⑤	⑥	⑦	⑧	⑨	
P-1 Morogoro road	-	-	-	-	-	-	-	-	-	-
* -Up to Port Ac. J.	-	8	1314	245	100	200	300	245	600	
P-2 New bagamoyo road	1.38	-	-	-	-	-	-	-	-	-
*Upanga road		8	748	235	100	200	300	245	600	
-Central area road	0.23	8	16	150	50	150	250	165	450	
New bagamoyo road										
* -Up to Morocco J.	-	8	696	235	100	200	300	245	600	
-Beyond Morocco J.	1.15	8	696	235	100	200	300	245	600	
P-5 Mwinjima Area Group	9.35	-	-	-	-	-	-	-	-	-
Mwinjima road	1.40	10	270	185	70	200	250	200	520	
Mwinjima L-1	1.50	10	13	150	50	150	250	165	450	
Morocco road	0.80	10	318	185	70	200	250	200	520	
Kinondoni road	0.35	10	146	165	50	150	250	165	450	
Shekilango road	1.80	6	128	215	100	200	300	245	600	
Makanya road	3.50	8	8	135	50	150	250	165	450	
P-7 Central Area Group	3.70	-	-	-	-	-	-	-	-	-
Central Area roads	3.70	8	16	150	50	150	250	165	450	
Bandari road	-	-	-	-	-	-	-	-	-	-
Nkurumah road	-	-	-	-	-	-	-	-	-	-
Sokoine road	-	-	-	-	-	-	-	-	-	-
Gerezani road	-	-	-	-	-	-	-	-	-	-
Kivukoni road	-	-	-	-	-	-	-	-	-	-
Maktaba road	-	-	-	-	-	-	-	-	-	-
Ohio road	-	-	-	-	-	-	-	-	-	-
Ocean road	-	-	-	-	-	-	-	-	-	-
P-8 Kariakoo Area Group	24.68	-	-	-	-	-	-	-	-	-
Kariakoo area roads	24.68	8	57	165	50	150	250	165	450	
Msinbazi road	-	-	-	210	-	-	-	-	-	-
P-9 Chango'mbe Area Group	9.04	-	-	-	-	-	-	-	-	-
Chango'mbe Area roads										
-Factory area roads	5.41	8	179	175	70	200	250	200	520	
-Residence area roads	3.63	8	13	150	50	150	250	165	450	
Chango'mbe road	-	-	-	-	-	-	-	-	-	-

*Widening

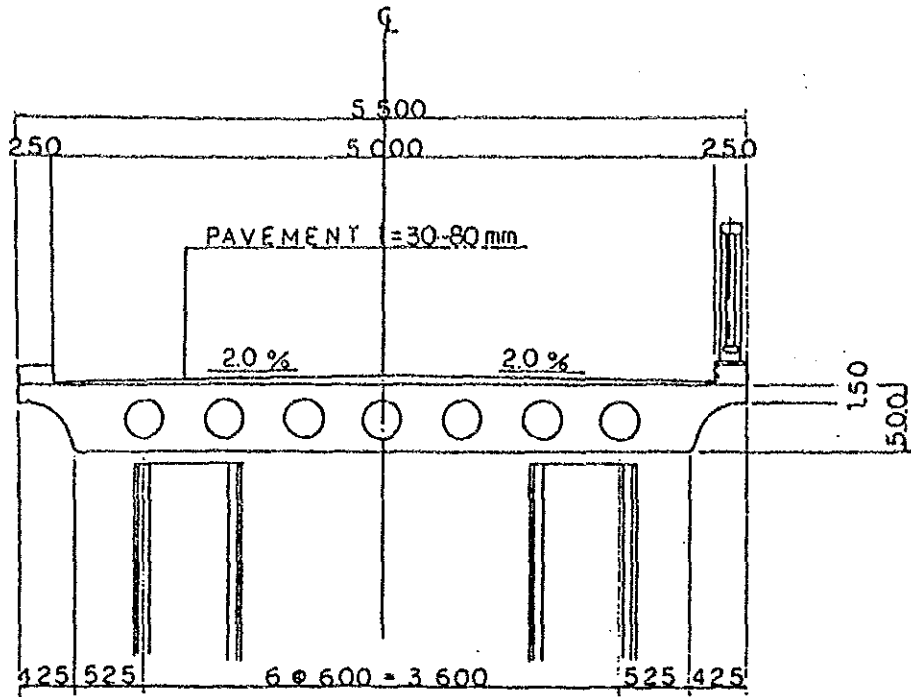
Appendix 5.3 Design Pavement Thickness

Link No.	Name of Roads	Road Length (km)	Estimated CBR Val.	Design Period (Year)	Design Traffic Number (2004)	Design Traffic Number (DTM) (2014)	Full-depth Overlay Recon. (2004)	Full-depth Overlay Recon. (2014)	Effective Thickness (Te) (mm)	Overlay Thickness (mm)	Reconstruction Length (km)			
												①	②	③
P-1	Morogoro road	5.72	-	-	-	-	-	-	-	-	-			
*	Up to Port Ac. J.	5.72	8	10	20	514	1314	230	245	120	-	10+20+30		
P-2	New bagamoyo road	9.79	-	-	-	-	-	-	-	2.30	-	1.38		
*	Upanga road	1.33	8	10	20	284	748	225	235	125	-	100	10+20+30	
-	Central area road	0.53	8	10	20	8	16	135	150	120	0.30	25	0.23	5+15+25
	New bagamoyo road													
*	Up to Morocco J.	3.53	8	10	20	-	696	-	235	-	-	-	-	
-	Beyond Morocco J.	4.40	8	10	20	284	696	225	235	110	2.00	100	1.15	10+20+30
P-5	Mwinjuma road	16.73	-	-	-	-	-	-	-	-	7.03	-	9.35	
	Mwinjuma road	2.15	10	10	20	104	270	170	185	55	0.75	100	1.40	7+20+25
	Mwinjuma L-1	1.50	10	10	20	-	13	-	100	-	-	-	1.50	5+15+25
	Morocco road	3.58	10	10	20	138	318	175	185	80	2.78	100	0.80	7+20+25
	Kinondoni road	0.76	10	10	20	-	146	-	165	-	-	-	0.35	5+15+25
	Shekilango road	3.80	6	10	20	57	128	195	215	55	2.00	100	1.80	10+20+30
	Makanya road	5.00	8	10	20	4	8	125	135	80	1.50	50	3.50	5+15+25
P-7	Central Area Group	20.98	-	-	-	-	-	-	-	-	17.08	-	3.70	
	Central Area roads	9.80	8	10	20	8	16	135	150	120	6.10	25	3.70	5+15+25
	Bandari road	2.20	8	10	20	280	-	205	-	95	2.00	100	-	
	Nkrumah road	0.36	8	10	20	7	-	100	-	120	0.36	25	-	
	Sokoine road	0.82	8	10	20	244	-	205	-	120	0.82	80	-	
	Gezezani road	1.39	8	10	20	273	-	205	-	95	1.39	100	-	
	Kivukoni road	1.22	8	10	20	66	-	175	-	120	1.22	60	-	
	Maktaba road	0.93	8	10	20	44	-	175	-	120	0.93	60	-	
	Ohio road	0.96	8	10	20	8	-	135	-	120	0.96	25	-	
	Ocean road	3.30	8	10	20	7	-	100	-	110	3.30	25	-	
P-8	Kariakoo Area Group	31.68	-	-	-	-	-	-	-	-	3.70	-	24.68	
	Kariakoo Area roads	30.00	8	10	20	27	57	160	165	75	2.02	90	24.68	5+15+25
	Msimbazi road	1.68	8	10	20	327	-	210	-	130	1.68	80	-	
P-9	Chango' mbe Area Group	19.20	-	-	-	-	-	-	-	-	3.01	-	9.04	
	Chango' mbe Area	14.60	-	-	-	-	-	-	-	-	-	-	-	
	Factory area roads	7.61	8	10	20	58	179	175	200	110	1.35	70	5.41	7+20+25
	Residence area roads	6.99	8	10	20	7	13	100	100	55	1.66	25	3.63	5+15+25
	Chango' mbe road	4.6	10	10	20	257	-	185	-	120	1.77	70	-	

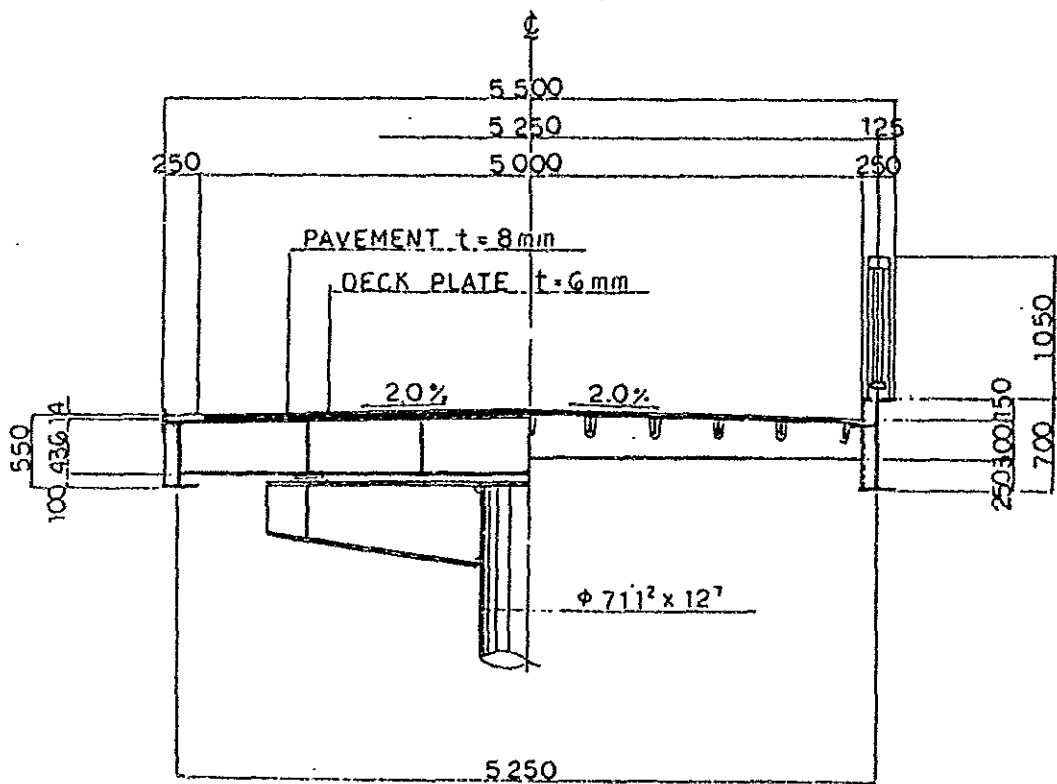
*Widening

Appendix 5.4(1) Alternative Study on Pedestrian Bridge at Manzese

Items of Evaluation	Alternative 1 PC Hollow Slab	Alternative 2 Metal Plate Floor
1. Project Cost - Super Structure - Sub Structure	46,300 Million (34,500) (11,800)	47,300 Million (40,800) (6,500)
2. Workability	Stagings required for construction of the super-structure will interfere with public traffic.	No staging works are required.
3. Maintenance	Maintenance cost is very small.	Painting is required at every 7 years.
4. Aesthetic View	Excelent	Good
5. Technology Transfer	New technology	Ordinary technology
6. Conclusion	The Study Team recommends PC Hollow Slab Bridge from the view point of construction and maintenance costs as well as aesthetic aspect and technology transfer.	



Alternative 1: Prestressed Concrete Hollow Slab Bridge

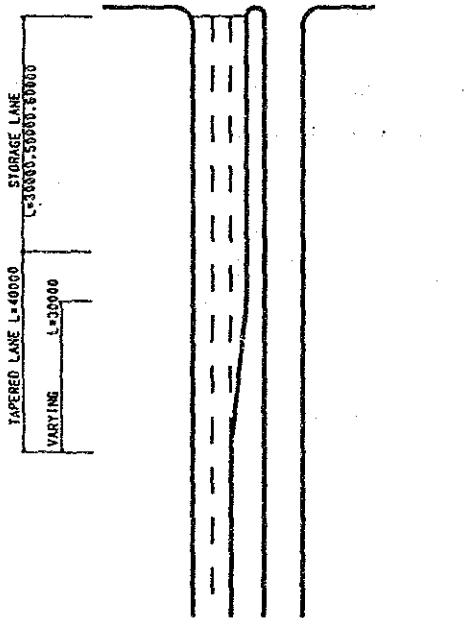


Alternative 2: Metal Plate Floor Bridge

APPENDIX 5.5 BASIC DESIGN DRAWINGS

Work Items	Drawing No.
1. Location of Priority Intersections	No. A-1
2. Tanganyika Motor Intersection (Upanga Road)	No. A-2
3. New Kigogo Road Junction (Morogoro Road)	No. A-3
4. Port Access Junction (Morogoro Road)	No. A-4
5. Manzese On/Off Loading Bay (Morogoro Road)	No. A-5
6. Manzese Bus Terminal	No. A-6
7. Manzese Truck Terminal	No. A-7
8. Manzese Pedestrian Bridge	No. A-8
9. Bus Bay and Approach Road	No. A-9
10. Lighting Facilities and Traffic Signal	No. A-10
11. Drainage Structures (1)	No. A-11
12. Drainage Structures (2)	No. A-12
13. Relocation Plan of Existing Utilities	No. A-13

PRIORITY INTERSECTIONS S=1:500

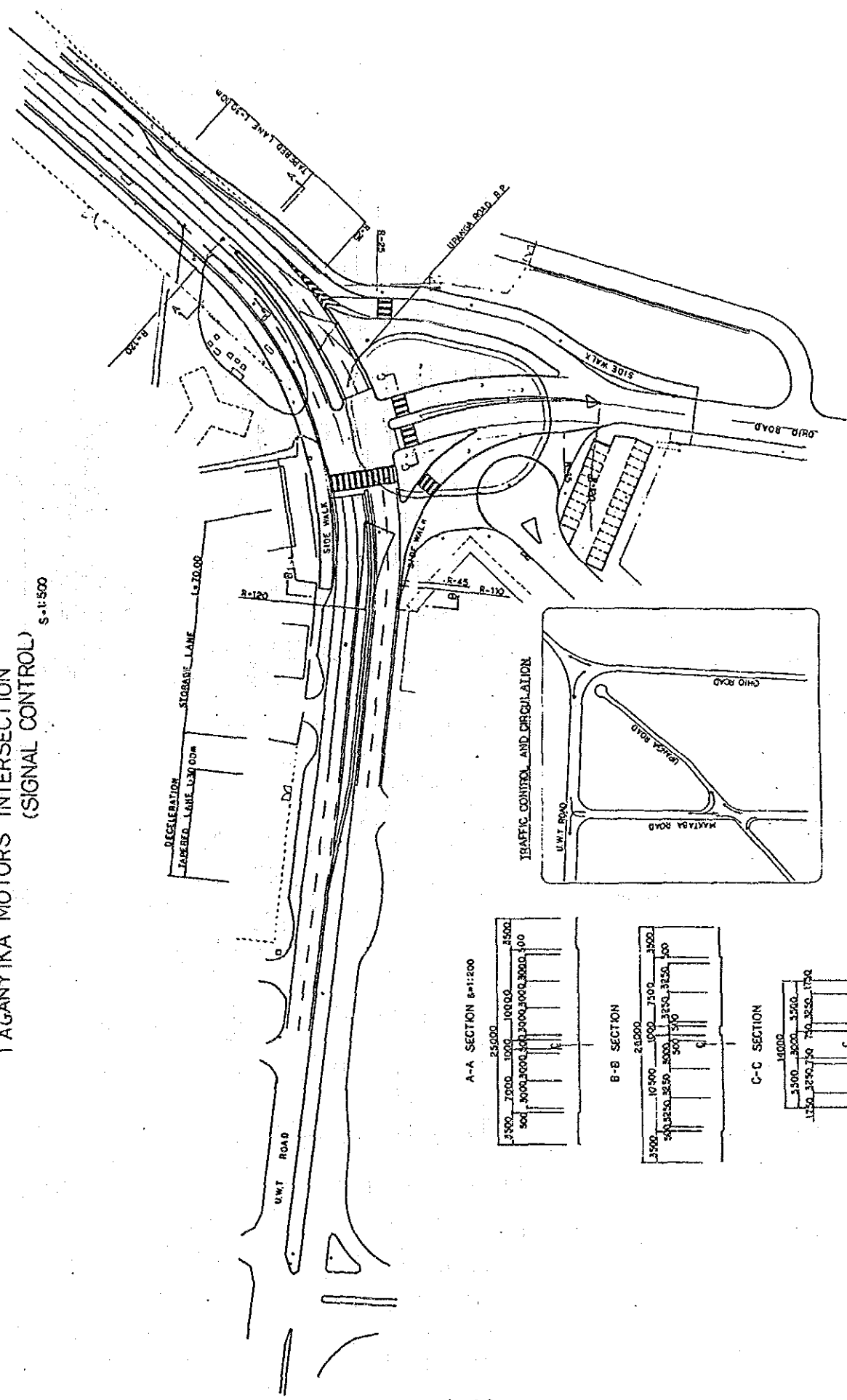


LOCATION OF PRIORITY INTERSECTIONS		LENGTH OF STORAGE LANE (M)
NAME OF ROAD	LOCATION	
MOROGORO ROAD	NO. 5+15	30.00
	NO. 7+80	30.00
	NO. 14+00	30.00
	NO. 24+00	30.00
	NO. 28+30	30.00
	NO. 32+80	30.00
	NO. 36+55	30.00
	NO. 44+00	30.00
	NO. 52+50	30.00
	NO. 7+00	30.00
NEW BAGANDY ROAD	NO. 4+25	30.00
	NO. 10+00	50.00
	NO. 13+20	30.00
	NO. 18+00	50.00

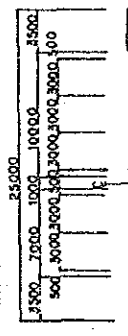
THE UNITED REPUBLIC OF TANZANIA DAR ES SALAAM CITY COUNCIL	ROAD IMPROVEMENT AND MAINTENANCE IN DARES SALAAM	JAPAN INTERNATIONAL COOPERATION AGENCY	LOCATION OF PRIORITY INTERSECTIONS	DATE	DRAWING NO.
					A 1 /

TAGANYIKA MOTORS INTERSECTION (SIGNAL CONTROL)

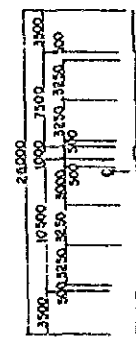
S=1:500



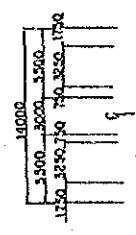
A-A SECTION @ 1:200



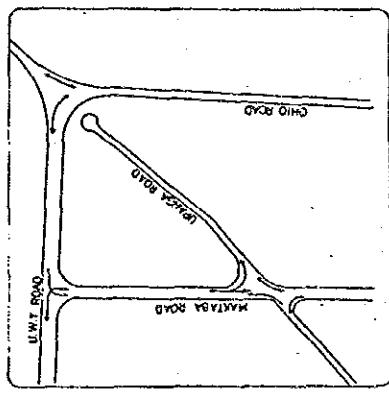
B-B SECTION



C-C SECTION



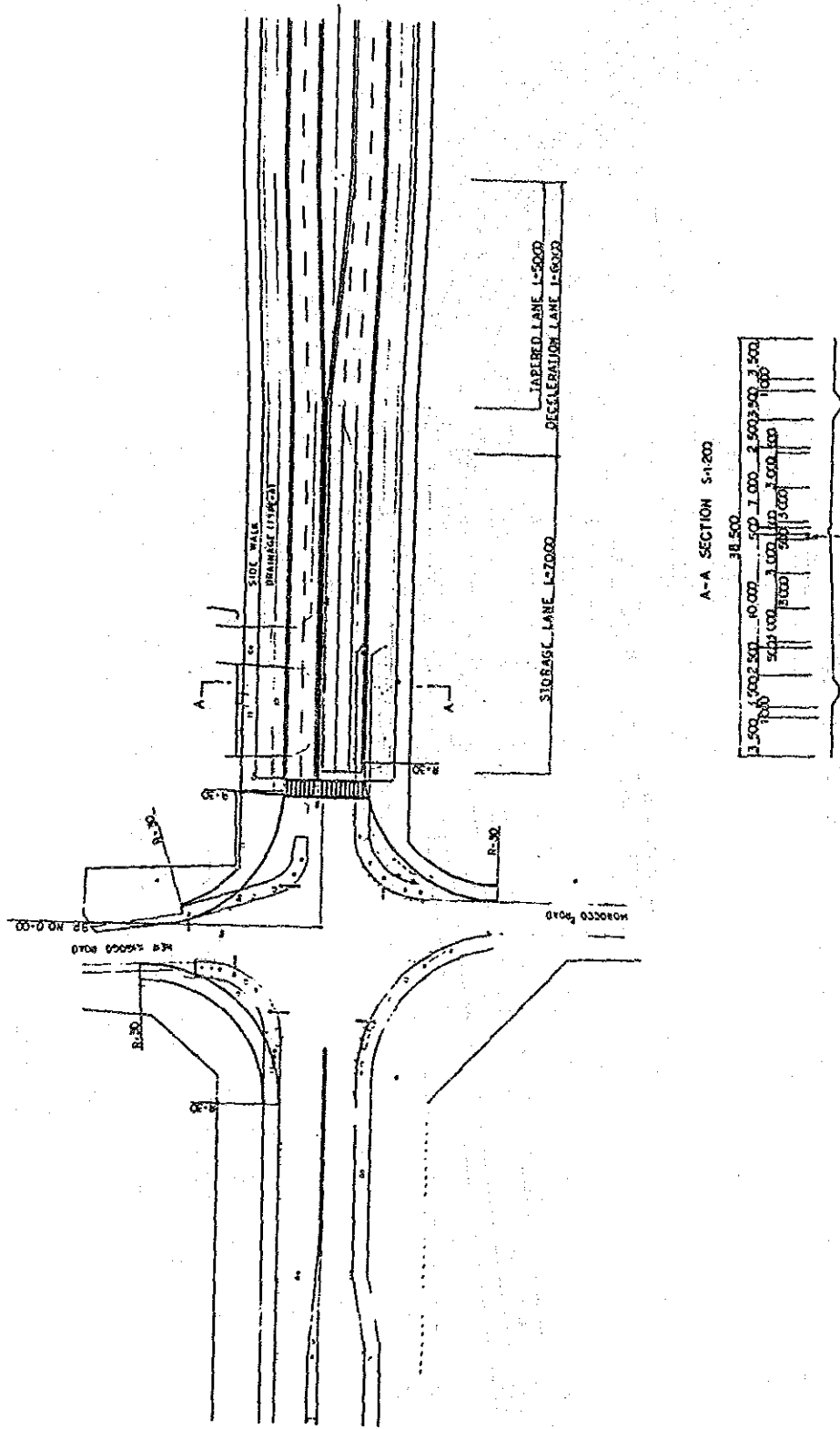
TRAFFIC CONTROL AND CIRCULATION



THE UNITED REPUBLIC OF TANZANIA DAR ES SALAAM CITY COUNCIL	BASIC DESIGN STUDY ON ROAD IMPROVEMENT AND MAINTENANCE IN DAR ES SALAAM	JAPAN INTERNATIONAL COOPERATION AGENCY	UPANGA ROAD	TAGANYIKA MOTORS INTERSECTION	DATE: _____ DRAWING NO: A-39
---	---	---	-------------	-------------------------------	---------------------------------

INTERSECTION AT NEW KIGOGO ROAD
(SIGNAL CONTROL)

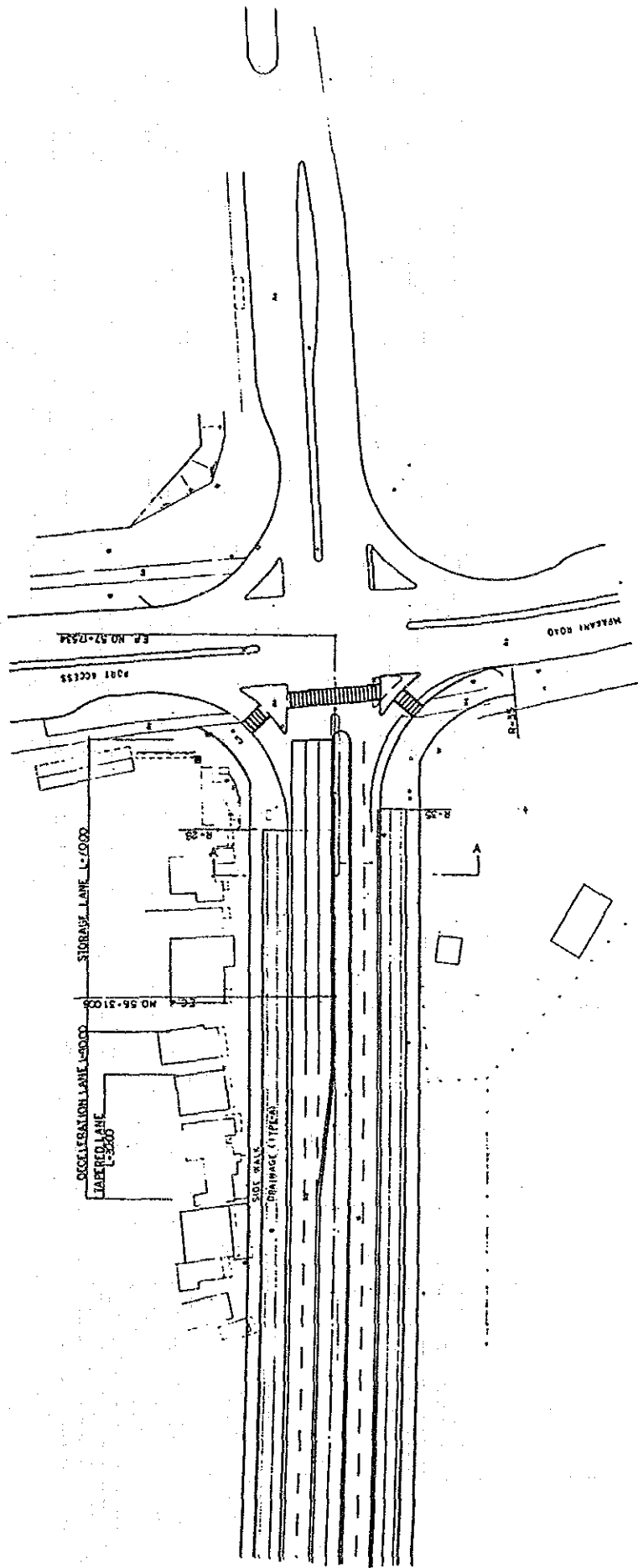
S=1:500



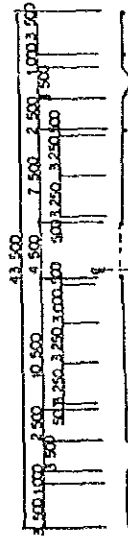
<p>THE UNITED REPUBLIC OF TANZANIA DAR ES SALAM CITY COUNCIL</p>	<p>BASIC DESIGN STUDY ON ROAD IMPROVEMENT AND MAINTENANCE IN DAR ES SALAM</p>	<p>JAPAN INTERNATIONAL COOPERATION AGENCY</p>	<p>MOROGORO ROAD INTERSECTION AT NEW KIGOGO ROAD</p>	<p>DATE A 3</p>
--	---	---	--	---------------------

INTERSECTION AT PORT ACCESS
(SIGNAL CONTROL)

S=1:500



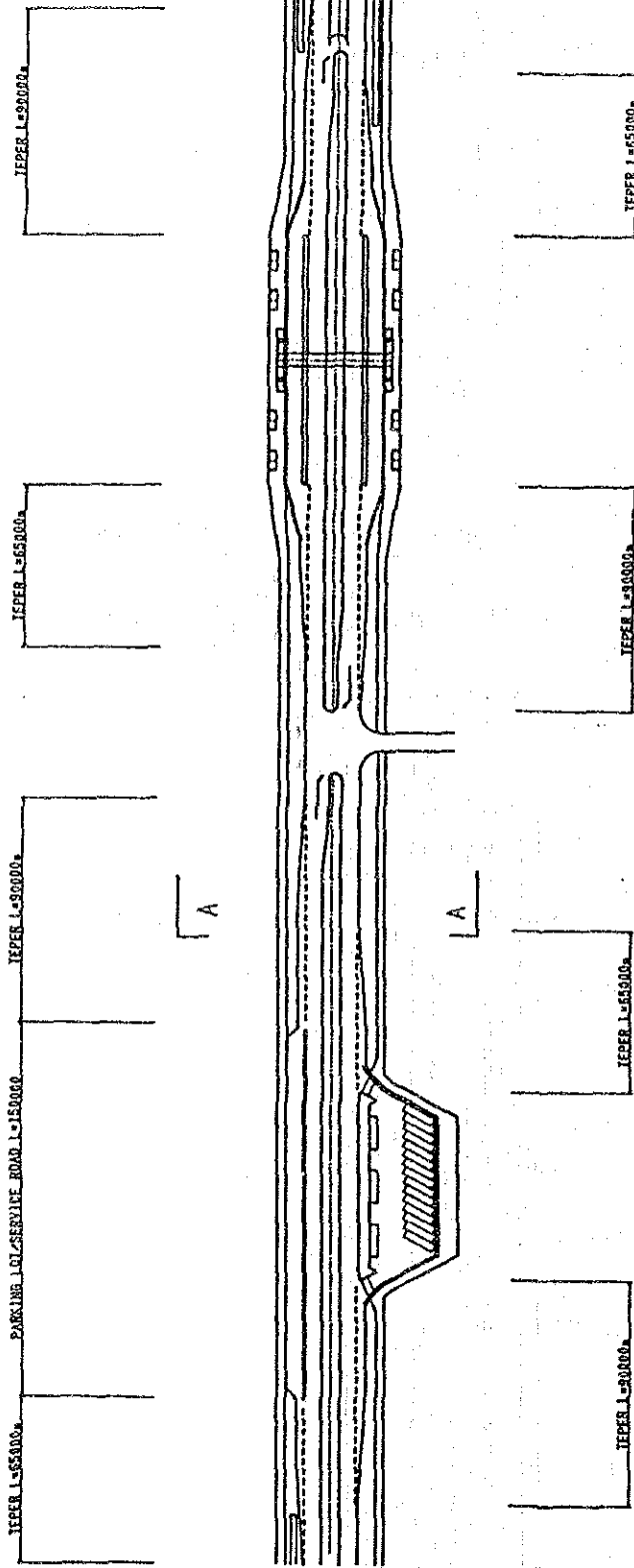
A-A SECTION S=1:200



THE UNITED REPUBLIC OF TANZANIA DAR ES SALAAM CITY COUNCIL	BASIC DESIGN STUDY ON ROAD IMPROVEMENT AND MAINTENANCE IN DAR ES SALAAM	JAPAN INTERNATIONAL COOPERATION AGENCY	MOROGORO ROAD INTERSECTION AT PORT ACCESS	DATE DRAWING NO. A / 4
---	---	---	--	------------------------------

GENERAL VIEW OF MANZESE SECTION

S = 1:1000



A-A SECTION S = 1:150



THE UNITED REPUBLIC OF TANZANIA
DAR ES SALAAM CITY COUNCIL

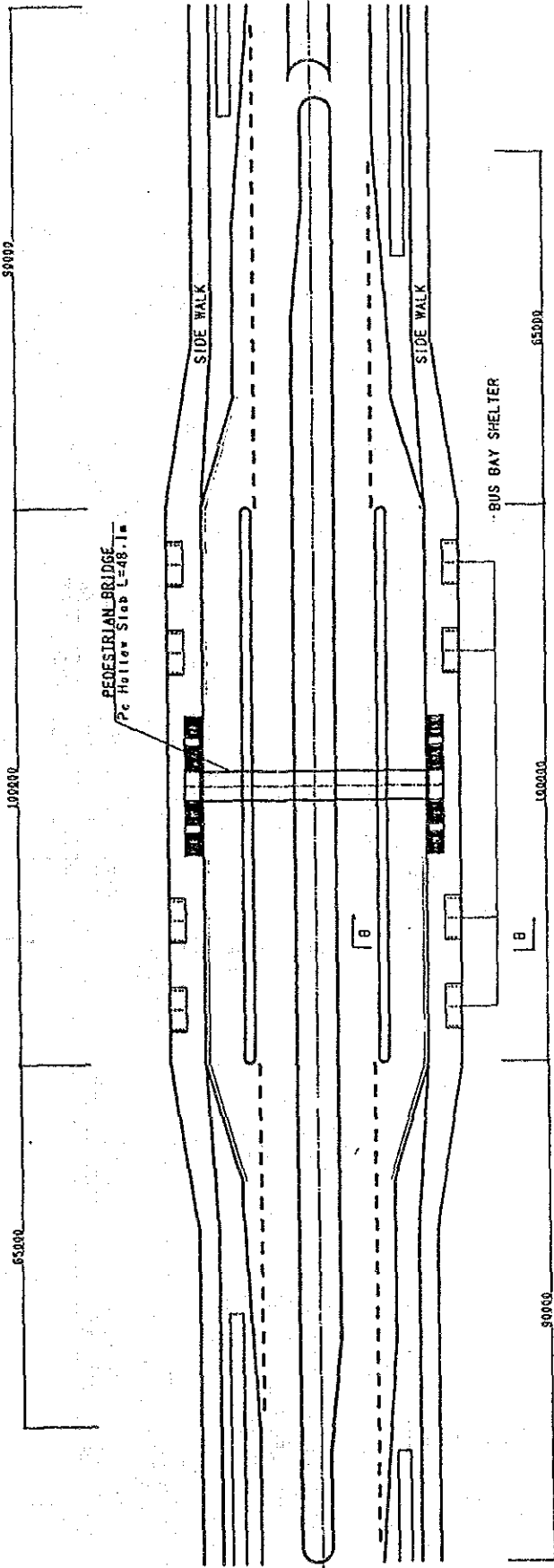
BASIC DESIGN STUDY
ON
ROAD IMPROVEMENT AND MAINTENANCE IN DAR ES SALAAM

JAPAN INTERNATIONAL
COOPERATION AGENCY

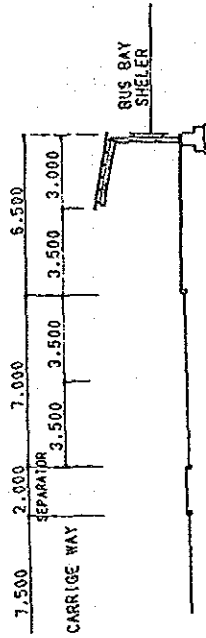
MOROGORO ROAD
GENERAL VIEW OF
MANZESE SECTION

DATE
DRAWING NO.
A 5

MANZESE BUS TERMINAL S=1:100
(MOROGORO ROAD)

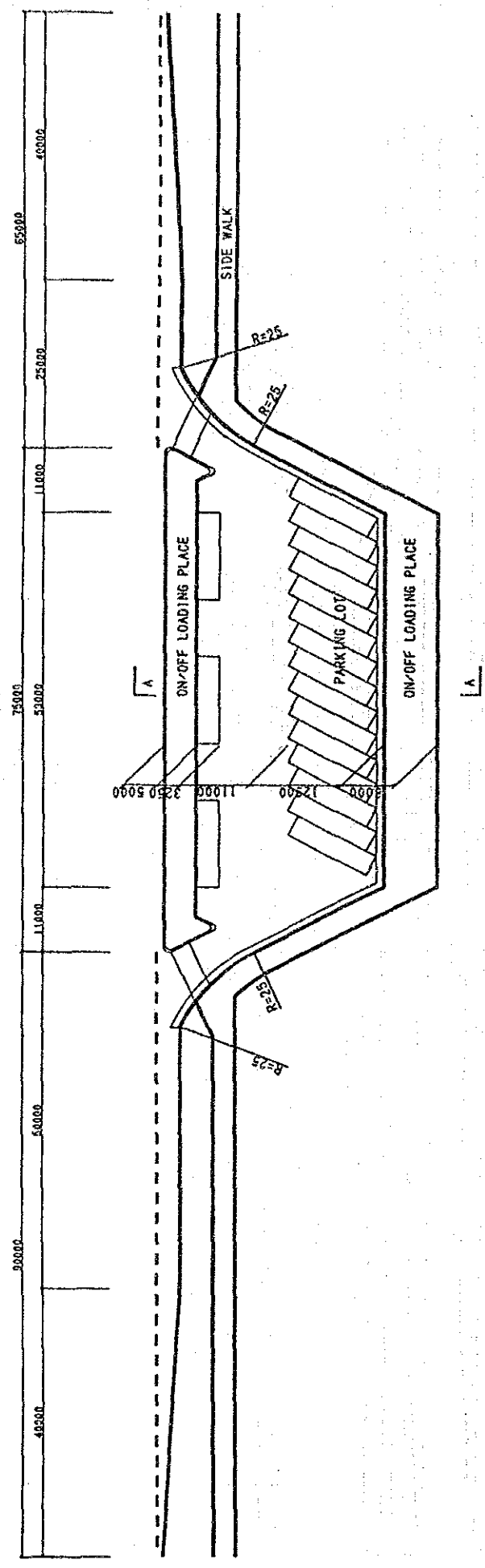


B-B SECTION S=1:100

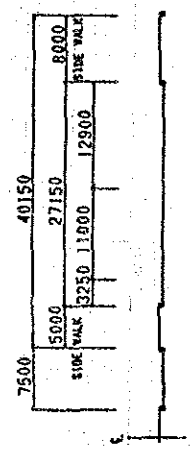


THE UNITED REPUBLIC OF TANZANIA DAR ES SALAAM CITY COUNCIL	BASIC DESIGN STUDY ON ROAD IMPROVEMENT AND MAINTENANCE IN DARES SALAAM	JAPAN INTERNATIONAL COOPERATION AGENCY	MOROGORO ROAD MANZESE BUS TERMINAL	DATE A 6 /
---	--	---	---------------------------------------	---------------

MANZESE TRUCK TERMINAL S=1:300
(ON/OFF LOADING BAY)



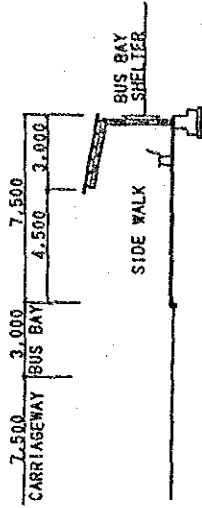
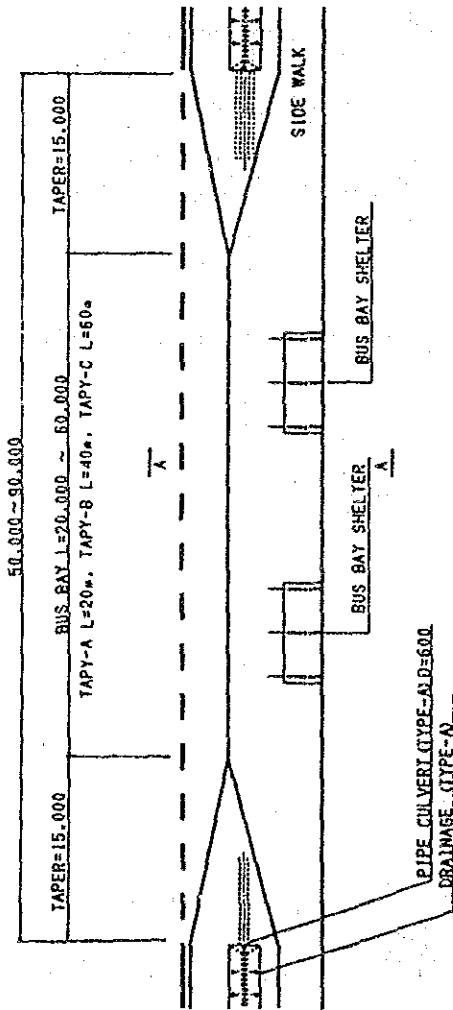
A-A SECTION S=1:300



THE UNITED REPUBLIC OF TANZANIA DAR ES SALAM CITY COUNCIL	ROAD IMPROVEMENT AND MAINTENANCE IN DARES SALAAM	BASIC DESIGN STUDY ON	JAPAN INTERNATIONAL	MOROGORO ROAD	DATE	PROJECT NO.
			COOPERATION AGENCY	MANZESE TRUCK TERMINAL		A 7

BUS BAY TYPE A-C S=1:200

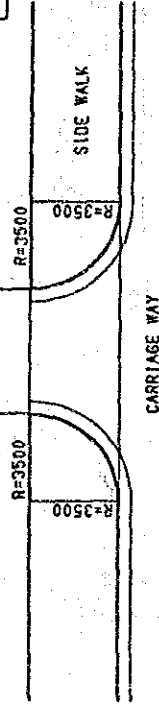
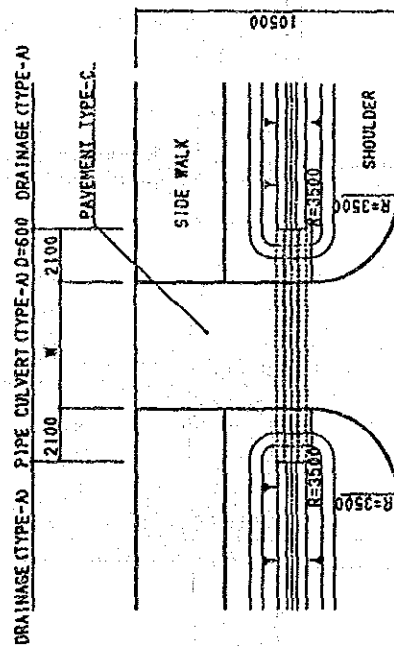
A-A SECTION S=1:100



LOCATION OF BUS BAY	
NAME OF ROAD	LOCATION TYPE
MOROCORO ROAD	NO. 0770 TYPE-B (L, R)
	NO. 10430 TYPE-C (L, R)
	NO. 17490 TYPE-C (L, R)
	NO. 25430 TYPE-B (L, R)
	NO. 27460 TYPE-B (R)
	NO. 41430 TYPE-A (L)
	NO. 44420 TYPE-A (L)
	NO. 45480 TYPE-A (R)
	NO. 51490 TYPE-A (L, R)
	NO. 1480 TYPE-A (R)
NO. 3480 TYPE-A (L)	
NO. 10420 TYPE-A (R)	
NO. 10160 TYPE-A (L)	
NEW BAGAMOTO ROAD	NO. 1420 TYPE-A (L)
	NO. 12440 TYPE-A (R)
	NO. 14440 TYPE-A (L)
NEW BAGAMOTO ROAD (KEYMO-MOROCO J.C.I)	5 NOS. TYPE-A
	5 NOS. TYPE-B
MOROCORO ROAD	5 NOS. TYPE-A
	4 NOS. TYPE-B

APPROACH ROAD (A) W S=1:100

APPROACH ROAD (B) W S=1:100



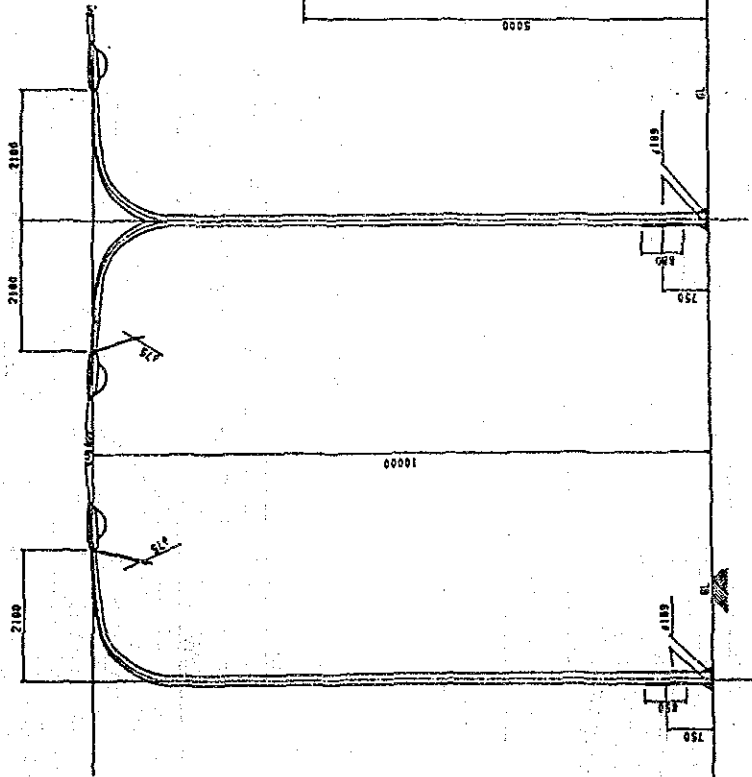
THE UNITED REPUBLIC OF TANZANIA DAR ES SALAAM CITY COUNCIL	BASIC DESIGN STUDY ON ROAD IMPROVEMENT AND MAINTENANCE IN DARES SALAAM	JAPAN INTERNATIONAL COOPERATION AGENCY	BAS BAY AND APPROACH ROAD	DATE A 31
---	--	---	---------------------------	--------------

LIGHTING FACILITIES

TYPE-L

S=1:40

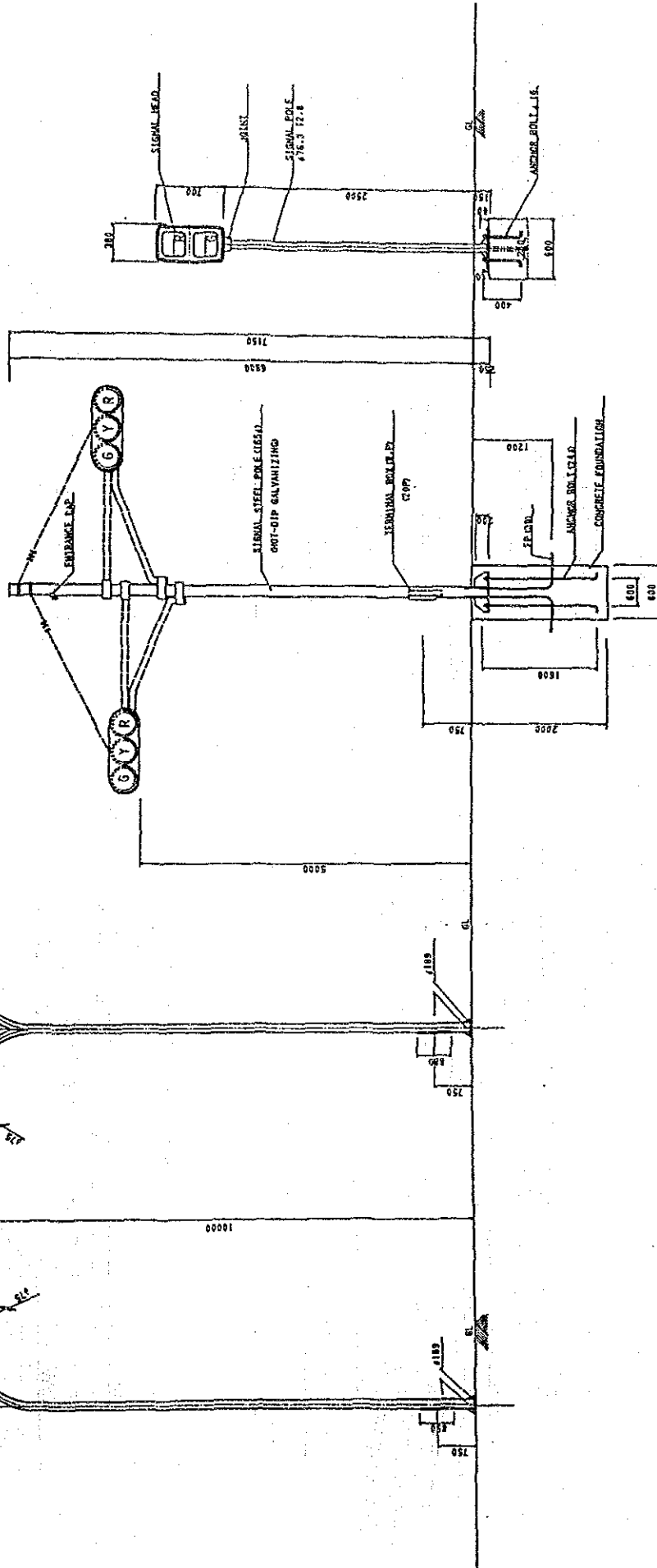
TYPE-T



TRAFFIC SIGNAL

SIGNAL STEEL POLE
S=1:30

PEDESTRIAN SIGNAL
S=1:20



THE UNITED REPUBLIC OF TANZANIA
DAR ES SALAAM CITY COUNCIL

BASIC DESIGN STUDY
ON
ROAD IMPROVEMENT AND MAINTENANCE IN DAR ES SALAAM

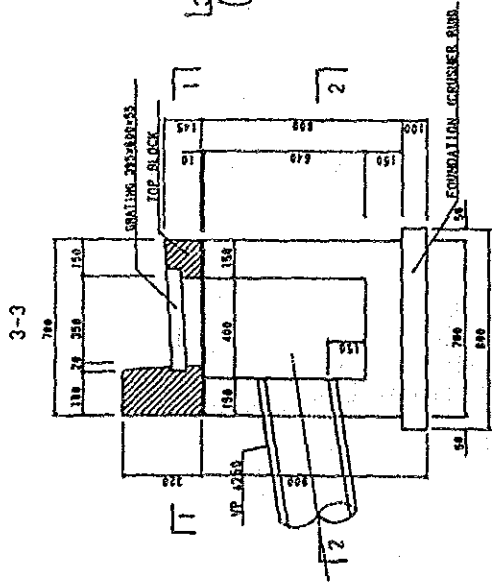
JAPAN INTERNATIONAL
COOPERATION AGENCY

LIGHTING FACILITIES
AND TRAFFIC SIGNAL

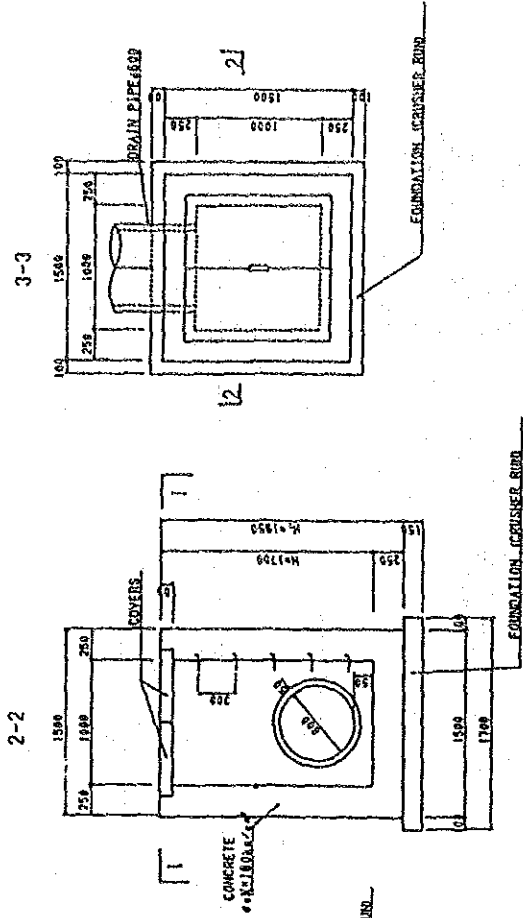
DATE

DRAWING NO.
A 10 /

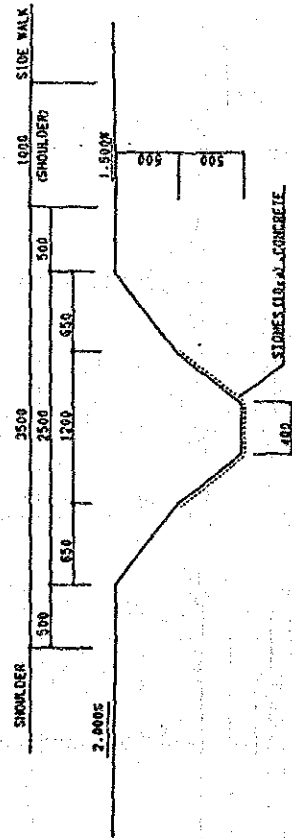
CATCH PIT S = 1:10
B400-L506-H640



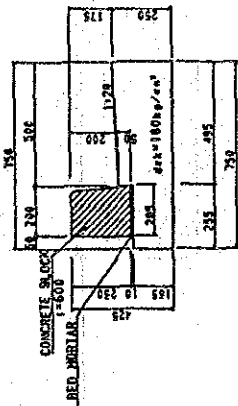
MAN HOLE S = 1:20
B1500-L1500-H



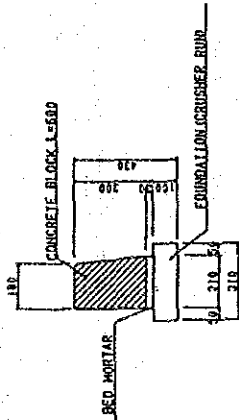
DRAINAGE (ROCK RIPRAP) TYPE-A S=1:20



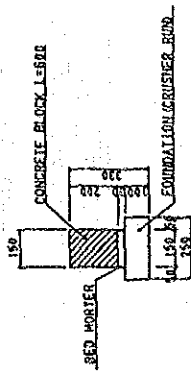
L-SIDE DITCH S=1:10



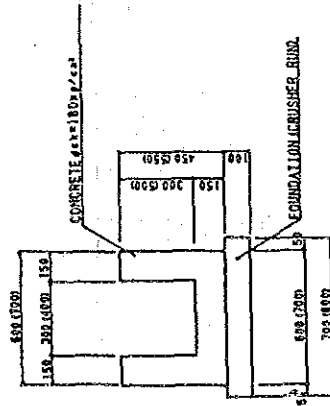
KERB (FOR MEDIAN STRIP) S=1:10



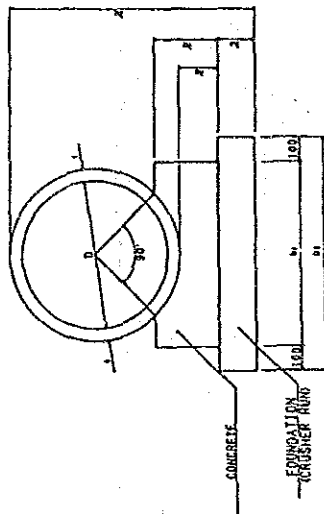
BOUNDARY BLOCK S=1:10



U-SHAPED DRAIN 300x300 (400x500)
S = 1:10

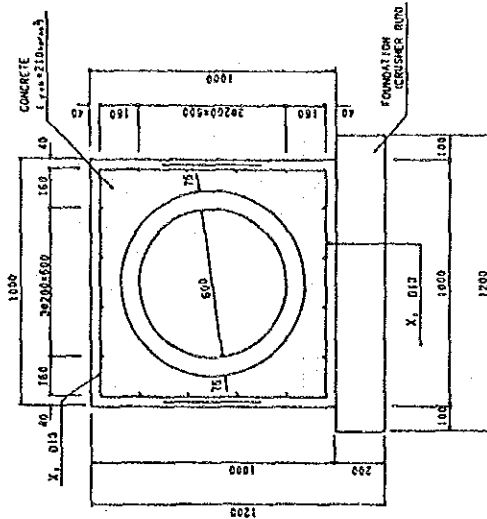


PIPE CULVERT TYPE-B
(D=300~1000) S=1:10



TYPE	D	h	b1	b2	b3	b4	b5	b6	b7
D-300	300	30	500	700	610	160	100	150	150
D-600	600	50	750	950	1000	260	150	150	150
D-1000	1000	82	1200	1460	1564	380	200	200	200

PIPE CULVERT TYPE-A (D=600)
DRAIN PIPE (A) S=1:10



THE UNITED REPUBLIC OF TANZANIA
DAR ES SALAAM CITY COUNCIL

BASIC DESIGN STUDY
ON
ROAD IMPROVEMENT AND MAINTENANCE IN DAR ES SALAAM

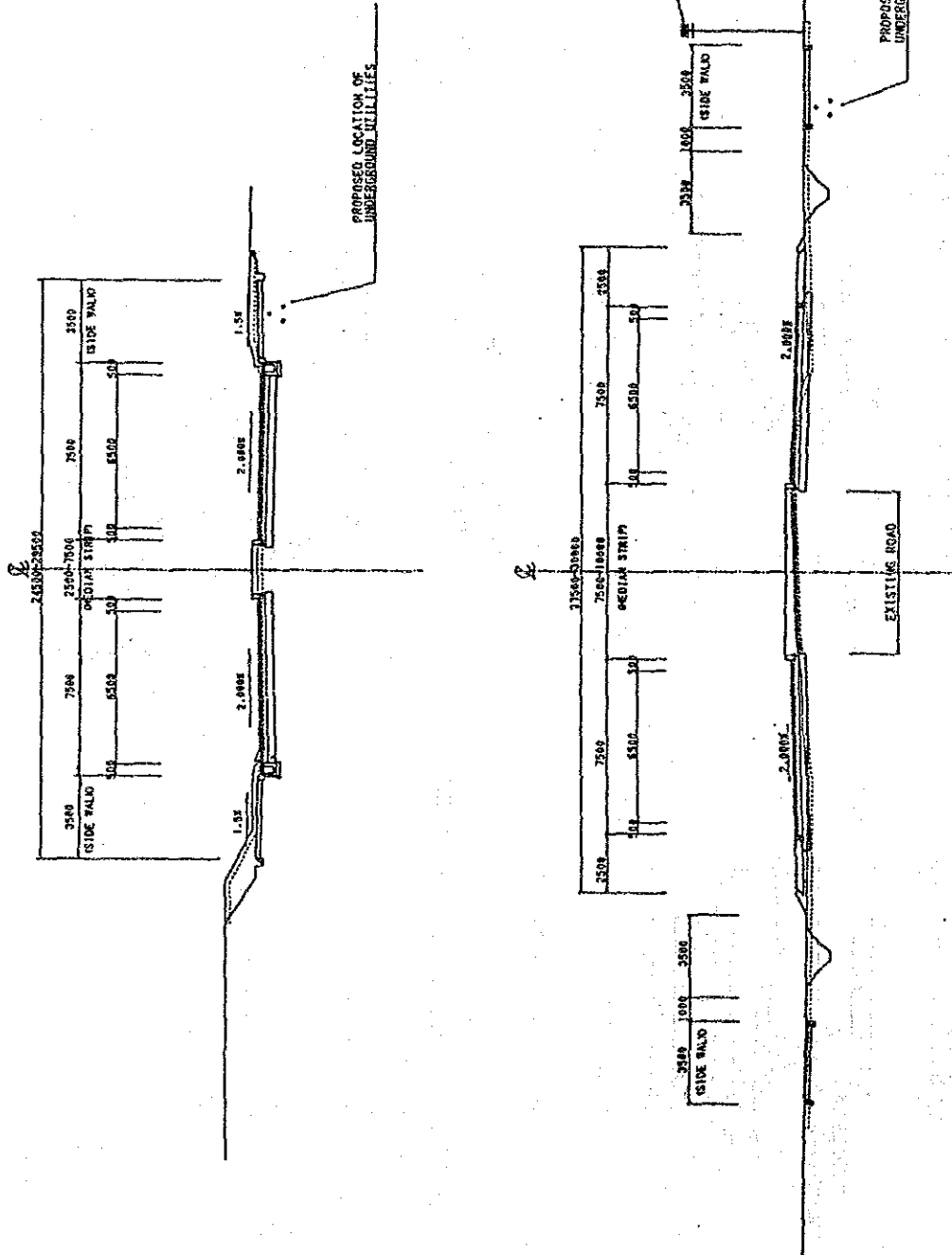
JAPAN INTERNATIONAL
COOPERATION AGENCY

TYPICAL SECTIONS OF
DRAINAGE STRUCTURES
AND MISCELLANEOUS (2)

DATE
A 12 /

RELOCATION PLAN OF EXISTING UTILITIES

S=1:100

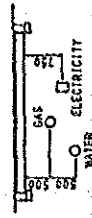


NAME OF ROAD	QUANTITY
MOROGORO ROAD	EXTELECOM LILE L = 5.7km
	HIGH TENSION LILE L = 11.4km
UPANGA ROAD	EXTELECOM L = 1.8km
	HIGH TENSION LILE L = 1.8km
NEW BAGAYOTO ROAD	HIGH TENSION LILE L = 3.5km
	WATER VALVE 5 NOS.

NOTE: ○ EXISTING WATER MAIN ALONG THE PROPOSED ROAD ARE LAID BENEATH THE ROAD MORE THAN 2.0M IN DEPTH SO THAT NO RELOCATION OF WATER MAIN HAS BEEN PLANNED UNDER THIS PROJECT

○ EXISTING TELEPHONE CABLES LAID ALONG UPANGA AND NEW BAGAYOTO ROADS HAVE NOT BEEN INCLUDED IN THE PROJECT SINCE THE CABLES WILL BE IMPROVED AND REPLACED SOON WITH A ASSISTANCE OF JAPANESE GOVERNMENT.

S=1:50



DETAILED RELOCATION PLAN OF UTILITIES

THE UNITED REPUBLIC OF TANZANIA DAR ES SALAAM CITY COUNCIL	BASIC DESIGN STUDY ON ROAD IMPROVEMENT AND MAINTENANCE IN DARES SALAAM	JAPAN INTERNATIONAL COOPERATION AGENCY	RELOCATION PLAN OF EXISTING UTILIES	DATE A 13	DRAWING NO. A 13
---	--	---	--	--------------	---------------------

Appendix 5.6 Unit Quantities of Each Improvement Measures (1)

Continued

Major Work Items	Unit	Reconstruction of Pavement		
		A-1 Overlay Quantity	A-2 Quantity (sq. m)	Type-C Quantity (sq. m)
Exc. & Filling, comon	cu. m			
-5 km<H Dist. <10km	cu. m	tww*2.31/m ²	0.05m*2.31/m ² =0.115	0.03m*2.31/m ² =0.115
Asphalt concrete	ton	tww*2.31/m ²	tww*1.01/m ²	tww*1.01/m ²
Prim coat	sq. m	tww*1.01/m ²		
Tuck coat	sq. m	tww*1.01/m ²		
Subbase, Crusher run	cu. m	tww*0.30m	tww*0.35m	tww*0.20m
Base, Selected Material	cu. m	tww*0.15m	tww*0.25m	
Concrete, Drainage45*60	Lin. m			
Pipe Culvert Dia. =100	Lin. m			
			w:width	t:thickness
Major Work Items	Unit	A-3 Widening		A-4 Drainage System
		Type-A Quantity (m)	Type-B Quantity (m)	
Exc. & Filling, comon	cu. m			
-5 km<H Dist. <10km	cu. m	10.0m ²	8.0m ²	
Asphalt concrete	ton	0.05*7.5m*2=2.31/m ² =1.73	0.05*7.0m*2=2.31/m ² =1.61	
Prim coat	sq. m	1.0m*7.5m*2=15.0	1.0m*7.0m*2=14.0	
Tuck coat	sq. m			
Subbase, Crusher run	cu. m	0.35*7.5m*2=5.25	0.35*7.0m*2=4.9	
Base, Selected Material	cu. m	0.25*7.5m*2=3.75	0.25*7.0m*2=3.5	
Side Walk	sq. m	3.5m*1=3.5	3.5m*1=3.5	
Concrete, Drainage45*60	Lin. m	1.0m*2nos. =2.0	1.0m*2nos. =2.0	
Pipe Culvert Dia. =100	Lin. m	27.0m/100m=0.27	24.0m/100m=0.24	wt (2*5.0m)
Miscellaneous work		1	1	

Appendix 5.6 Unit Quantities of Each Improvement Measures (2)

Major Work Items	Unit	A-5		A-6	
		Bus Bay		Intersection	
		Pavement: Type-A		Pavement: Type-A	
	Type-A	Type-B	Type-A	Type-B	
	Quantity Rates	Quantity Rates	Quantity Rates	Quantity Rates	
	(nos.)	(nos.)	(nos.)	(nos.)	
	A= (40.0+70.0)/2*3.0 =165m ²	A= (20.0+50.0)/2*3.0 =105m ²	A= (70.0+103.0)/2*3.0 =1200m ²	A= (50.0+90.0)/2*2*3.0 =840 m ²	
Exc. & Filling, comon	cu m				
-5 km<H Dist, <10km	ton	165.0*0.05*2.31/m ² =18.98	105.0*0.05*2.31/m ² =12.08	1200*0.05*2.31/m ² =138	840*0.05*2.31/m ² =96.6
Asphalt concrete	sq m	165.0*1.0=165	105.0*1.0=105	1200*1.0=1200	840*1.0=840
Prim coat	sq m				
Tuck coat	cu m	165.0*0.3m=49.5	105.0*0.3m=31.5	1200*0.3m=360	840*0.3m=252
Subbase, Crusher run	cu m	165.0*0.15m=24.75	105.0*0.15m=15.75	1200*0.15m=180	840*0.15m=126
Base, Selected Material	sq m				
Side Walk	Lia. m				
Concrete, Drainage 45*60	Lia. m				
Pipe Culvert Dia. =100					

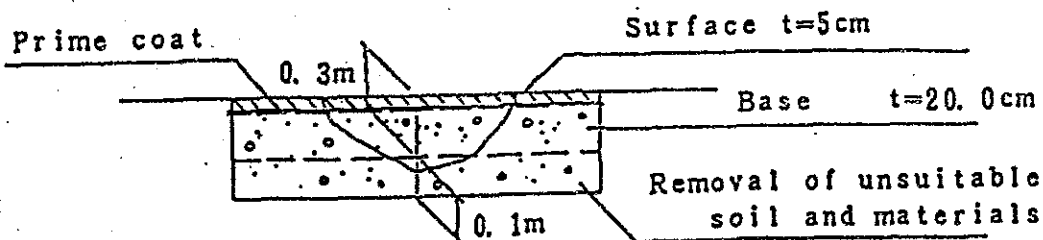
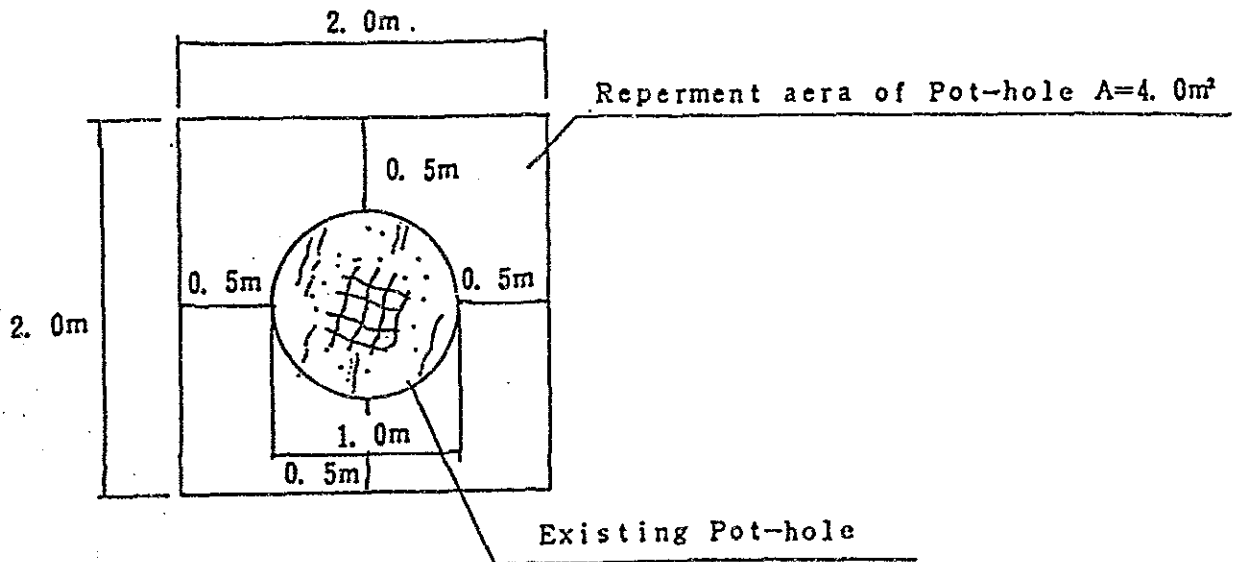
Major Work Items	Unit	B-1	
		Urgent Repair of Pot-halls	
		Quantity	Quantity
	(Tsh.)	(sq. m)	A=4.0m ²
Exc. & Filling, comon	cu m	2.060	
-5 km<H Dist, <10km	ton	11.100	4.0*0.05m*2.31/m ² =0.46
Asphalt concrete	sq m	210	4.0
Prim coat	sq m	100	
Tuck coat	cu m	7.690	
Subbase, Crusher run	cu m	3.120	4.0*0.2m=0.8
Base, Selected Material	sq m	1.010	
Side Walk	Lia. m	7.920	
Concrete, Drainage 45*60	Lia. m	66.570	
Pipe Culvert Dia. =100			

Appendix 5.6 Unit Quantities of Each Improvement Measures (3)
 (Estimated Unit Quantity of Pot-Holes)

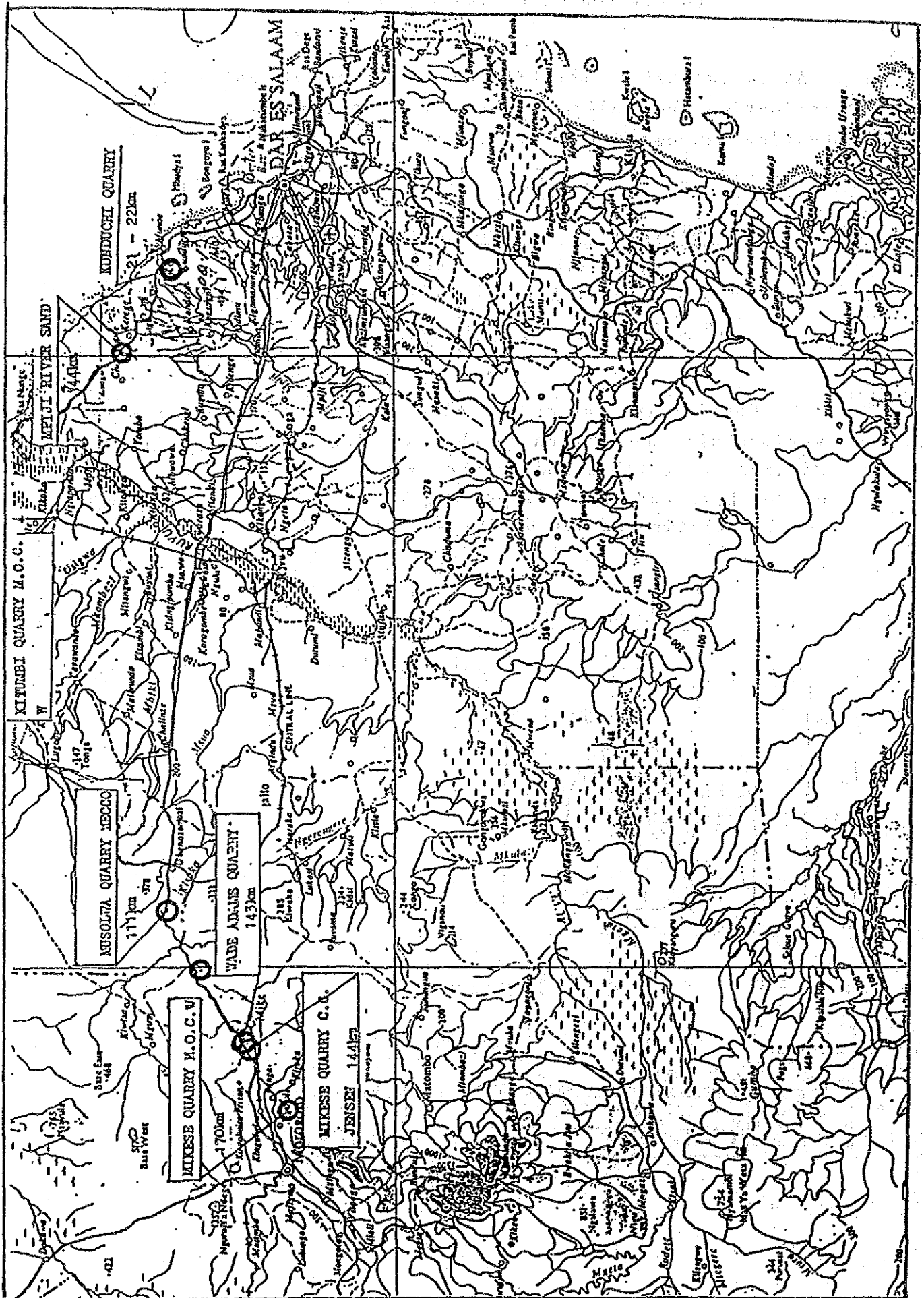
As the Result of the PSI Survey ,Number of Pot-hall distribution are analized as bellow following the road condition represented by PSI value

PSI value	Pot-hole ratio
PSI > 2.5	1 nos./100m
2.5 > PSI > 1.5	5 nos./100m
1.5 > PSI	10 nos./100m

Considering the actual size of Pot-holes being observed various size and pateron on the existing roads,the following Figures are established as the average size of Pot-hole and the ordinary repair method of Pot-hole for the Calculation of the Urgent repair of Pot-holes.



Appendix 5.7 Location of Quarry Sites and Borrow Pits



Appendix 5.8 Unit Cost of Materials

Particular	Unit	F/C portion (Yen)	L/C portion (TShs./day)
1 Light oil	lit.	38	0
2 Gasoline	lit.	0	121
3 Cement, ordinary	ton	14,000	20,200
4 Water-reduce agent	kg.	320	0
5 Deformed bars	ton	61,500	0
6 Round bars	kg.	76	0
7 Corrugated sheet	sq.m	360	0
8 Timber	cu.m	0	27,400
9 Plywood, 2.4 x 0.1 x 0.01	pc.	1,450	0
10 Annealed iron wire	kg.	110	0
11 Nail	kg.	100	0
12 Metal form, 0.3 x 1.5 m	pc.	2,450	0
13 Hunch form, 0.1 x 1.5 m	pc.	2,800	0
14 Cone	no.	27	0
15 Separator	m	80	0
16 Pipe support, 48.6 mm	m	340	0
17 Concrete pipe, 1000 mm	m	0	18,400
18 Straight asphalt	ton	40,700	0
19 Asphalt emulsion	kg.	55	0
20 Coral stone	ton	0	1,030
21 Coarse aggregate	ton	0	1,670
22 Fine aggregate	ton	0	1,030

Appendix 5.9 Unit Cost of Equipments

Particular	Spec.	Unit	F/C portion	L/C portion
			(Yen)	(TShs./day)
1. Bulldozer	21 t	hr	7,368	703
2. Bulldoer, w/ripper	32 t	hr	10,296	962
3. Tractor shovel	3.2 m3	hr	7,782	743
4. Wheel loader	2.1 m3	hr	3,938	376
5. Backhoe	0.6 m3	hr	3,612	306
6. Backhoe	0.4 m3	hr	2,435	206
7. Dump truck	11 t	hr	1,865	196
8. Dump truck	8 t	hr	1,529	161
9. Cargo truck	6 t	hr	966	104
10. asphalt cooker	4 m3	hr	9,639	808
11. Truck crane	4.9 t	hr	1,923	235
12. Truck crane	20 t	hr	4,478	548
13. Macadam roller	10 t	hr	1,548	187
14. Asphalt finisher	2.4 m	hr	4,098	488
15. Engine sprayer	0.4 m3	hr	169	8
16. Emulsion sprayer	200 lit.	day	869	40
17. Asphalt kettle	400 lit.	day	775	42
18. Motor grader	3.1 m	hr	2,966	323
19. Tire roller	8 t	hr	1,666	201
20. Vibrating roller	4 t	hr	2,074	200
21. Vibrating roller	0.5 t	hr	544	41
22. Plate compactor	90 kg	day	839	41
23. Rammer	60 kg	day	940	45
24. Water tanker	8 kl	hr	1,874	156
25. Vacuum car	4 m3	hr	2,248	188
26. Truck mixer	3.2 m3	hr	1,809	174
27. Asphalt plant	30 t/h	hr	15,346	1,454
28. Screening plant	30 t/h	day	20,681	1,223
29. Concrete mixer	0.5 m3	day	5,297	357
30. Crushing plant	30 t/h	day	51,879	3,068
31. Water jet	5 lit.	day	707	63
32. Concrete vibrator	45 mm	day	423	21
33. Diesel generator	50 kVA	day	4,331	365
34. Diesel generator	10 kVA	day	1,654	125
35. Air compressor	5 m3	day	4,917	414
36. Vacuum pump	80 mm	day	3,556	244

Appendix 5.10 Unit Cost of Labour

Particular	Basic Wage (TShs./day)	Charges (TShs./day)	Total Wage (TShs./day)
1. Foreman	700	175	875
2. Mechanic	600	150	750
3. Electrician	550	140	690
4. Operator A	600	150	750
5. Operator B	450	115	565
6. Assistant operator	420	105	525
7. Driver	500	125	625
8. MasonRigger	450	115	565
9. Welder	420	105	525
10. Pipe fitter	420	105	525
11. Pavement worker	450	115	565
12. Steel worker	450	115	565
13. Concrete worker	500	125	625
14. Carpenter	450	115	565
15. Skilled labour	450	115	565
16. Semi-skilled labour	420	105	525
17. Common labour	350	90	440
18. Common labour	300	75	375

- Note: (1) Working hour
- from Mon. to Fri. ; 7:30 - 16:30 (Lunch 12:00 - 13:00)
 - Saturdays ; 7:30 - 14:00
- (2) Overtime Rate
- Weekday ; 25% up
 - Midnight ; 50% up
 - Sundays ; 50% up

JICA