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1 Application for the Technical Cooperation (Development Study) by the Government of Japan



Application for the  
Technical Cooperation (Development Study)  
by the Government of Japan

1 PROJECT DIGEST

(1) Project Title

Master Plan Study on Bridge Development

(2) Location ( Map attached)

Trunk Road System

(3) Implementing Agency

- (a) Name of the Agency : Road Development Authority  
(b) Number of the Staff of the Agency (on a category basis- Labour Grades not included)

- (i) Senior Management : 35  
(ii) Staff and Professional Grade : 325  
(iii) Technical Clerical and allied Grades: 648

(c) Budget allocated to the RDA in 1993 :

Local Financial Provision	-	Rs. 2,380.154 Million
Foreign Aid (Loans)	-	Rs. 694.000 Million
Reimbursable Foreign Aid	-	Rs. 52.500 Million
		-----
Total		Rs. 3,127.554 Million
		=====

(d) Organization chart (attached)

(4) Justification of the Project

(a) Present condition of the sector :

The National Highways network of Sri Lanka comprises around 11,000 km and the number of existing bridges in this network is about 3500. Some of the bridges have been built in colonial times and are over 50-100 years old. These old bridges are structurally weak and are very narrow to accommodate the present volume of traffic. The existence of these structurally weak bridges on the highway network place restrictions on the vehicle weights to be permitted on the road system, thereby increasing the overall transport cost of goods transported on the highway network.

(b) Sectoral development policy of the National/Local Government:

The sectoral development policy of the government is to rehabilitate and develop the road system to meet the increasing traffic demand. The present day vehicles are designed to carry higher pay loads to economise on transportation costs and these vehicles impart heavier axle loads on the road system. The government policy is to reconstruct all weak and narrow bridges to permit the passage of present day vehicles on the road system without placing uneconomical restrictions on vehicle weights.

(c) Problems to be solved in the sector

Since all the bridges of the trunk road system can not withstand heavy loads of present day vehicles, they have to be reconstructed in a systematic manner and hence there is a need to make an in-depth study of these bridges and prepare a master plan for the replacement of bridges.

(d) Outline of the Project

The project is to make inspections of all weak and narrow bridges on the trunk road system and assess these bridges according to their load and vehicle volume carrying capacities and prepare a master plan for their replacement.

(e) Purpose (short-term objective) of the project

The short term objective is to make an assessment of all these weak and narrow bridges and the preparation of the master plan for bridge rehabilitation and to replace the bridges in very bad condition.

(f) Goal (long-term objective) of the Project

The long term objective is to replace all the deficient bridges in the road system by seeking foreign assistance for a bridge replacement programme.

(g) Prospective beneficiaries

The prospective beneficiaries are the transport operators who will be able to achieve more economical transport by way of moving heavier pay loads.

- (h) the Project's priority in the National Development Plan/Public Investment Programme

The infrastructure development especially highway sector development receives a very high priority in the Public Investment Programme.

- (5) Desirable or scheduled time of the commencement of the Project: Early 1994.
- (6) Expected funding source and /or assistance (including external origin) : OECF Japan.

## 2 TERMS OF REFERENCE OF THE PROPOSED STUDY

### (1) Necessity/Justification of the Study

Over 100 bridges which are structurally weak and too narrow to cater the present traffic demand has been identified. These bridges act as bottle necks in the trunk road system and this situation has to be rectified by replacing these bridges in a systematic manner.

### (2) Necessity/Justification of the Japanese Technical Cooperation

Although these bridges have been identified as deficient, the RDA does not have the capacity to carry out technical and economic evaluation of all these bridges and develop a master plan for bridge replacement and hence foreign assistance has to be sought for this purpose.

### (3) Objectives of the study

The objective of the study are :

- 1) To formulate a master plan for bridge improvement and rehabilitation for trunk roads (A- class).
- 2) To establish bridge inspection and maintenance manuals.

### (4) Area to be covered by the Study

The entire country except the inaccessible areas in the Northern and Eastern Provinces.

(5) Scope of the study

- 1) Collection and review of existing data and information such as Socio Economic data, Traffic data, Future development plans, Engineering data etc.,
- 2) Review of priorities and the road development plans of the 'A' Class - trunk road system of the country
- 3) Selection and rank of 'A' class trunk roads in order of priority and selection of bridges requiring urgent rehabilitation
- 4) Execution of preliminary design for selected bridges on high priority routes and on bridges requiring urgent rehabilitation (including reconstruction, improvement and widening).
- 5) Initial Environmental Examination : IEE
- 6) Estimation of preliminary construction costs for selected sample of bridge on higher priority routes requiring urgent rehabilitation
- 7) Formulation of a bridge development master plan for 'A' class trunk roads
- 8) Formulation of an implementation program taking into consideration the budget provision in 5 year Public Investment Programme
- 9) Evaluation and recommendations
  - Overall evaluation
  - Recommendation

(6) Schedule of the Study

The Study shall be carried out in accordance with the schedule given below:

- a) Inception Report - after 0.5 months
- b) Interim Report - after 7.0 months
- c) Draft Final Report - after 11.5 months
- d) Final Report - after 14.0 months



## (7) Reports

The Study Team shall prepare the following reports in English and submit them to RDA.

### 1) Inception Report (20 copies)

The Inception Report shall be submitted at the commencement of the Study in Sri Lanka

### 2) Interim Report (10 copies)

The Interim Report shall be submitted within seven (7) months of the commencement of the Study

### 3) Draft Final Report (25 copies)

The Draft Final Report shall be submitted within eleven and a half (11.5) months of the commencement of the Study. The RDA shall provide the Study Team its comments within one (1) month after the submission of Draft Final Report.

### 4) Final Report (50 copies)

The Final Report shall be submitted within two (2) months after the receipt of the comments of the Draft Final Report from the Government of Sri Lanka and will contain all the essential recommendations, results and findings of the Study.

## (8) Qualifications and experience of consultant

It is expected that the Study will require the services of a multi-disciplinary team of experts comprising of a team leader, traffic engineer, economist, highway engineer, structural engineer for superstructure, structural engineer, pavement engineer, materials engineer, soil engineer, construction planner, etc., with all of them having the necessary background and experiences.

## 3 FACILITIES AND INFORMATION FOR THE STUDY TEAM

(1) The RDA will, at its own expense, provide the Study Team with the following :

(a) Available data and information related to the Study

(b) Counterpart personnel :

01 No Chartered Civil Engineer with BSc (Eng).  
02 Nos Civil Engineers with BSc (Eng).

- (c) Suitable office space with office equipment in Colombo and the study area, if necessary
  - (d) Credentials or identification cards, if required
- (2) Available data, information, documents, maps etc. related to study

The team could be provided with the following information

- (a) Bridge inventory with the list of weak bridges
  - (b) Road Network Map
  - (c) Maps and Aerial Photographs from Survey Department on the request of the Study team
- (3) Information on the Security Conditions in the Study Area is safe

#### 4 GLOBAL ISSUES

There may not be an environmental impact due to this project, however, Initial Environmental Examination (IEE) has to be carried out as proposed in the scope of the study.

#### 5 UNDERTAKING OF THE GOVERNMENT OF SRI LANKA

The RDA will act as the counterpart agency to the Study Team and will also serve as a coordinating body in relations between the Study Team and other governmental and non-governmental organisations concerned.

- 1) In order to facilitate the smooth conduct of the study, the RDA, in cooperation with other relevant organisations, will take the following necessary measures to :

- permit the members of the Study Team to enter, leave and travel in Sri Lanka for the duration of their assignment, and exempt them from alien registration requirements and consular fees
- exempt the members of the Study Team from taxes, duties and any other charges on equipment, machinery and other materials brought into Sri Lanka for the conduct of the Study
- exempt the members of the Study Team from income tax and charges of any kind imposed on

or in connection with any emoluments or allowances paid to the members of the Study Team for their services in connection with the execution of the Study

- bear claims, if any arising against the members of the study team resulting from or occurring in the course of discharging their duties in the execution of the Study, except when such claims arise from gross negligence or of willful misconduct on the part of the members of the study team
- secure permission for entry into private properties or restricted areas where possible for the conduct of the study
- secure permission for the study team to take all necessary data and documents related to the study out of Sri Lanka to Japan
- provide medical services as needed (with the cost to be charged to members of the Study Team)
- ensure the safety of the members of the Study Team when and as is required in the course of the Study

6 THE GOVERNMENT OF SRI LANKA will bear claims, if any rises against member(s) of the Japanese Study Team resulting from, occurring in the course of or otherwise connected with the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the member of the Study Team.

7 ROAD DEVELOPMENT AUTHORITY will act as counterpart agency to the Japanese Study Team and also as coordinating body in relation with other governmental and non-governmental organisations concerned for the smooth implementation of the Study.

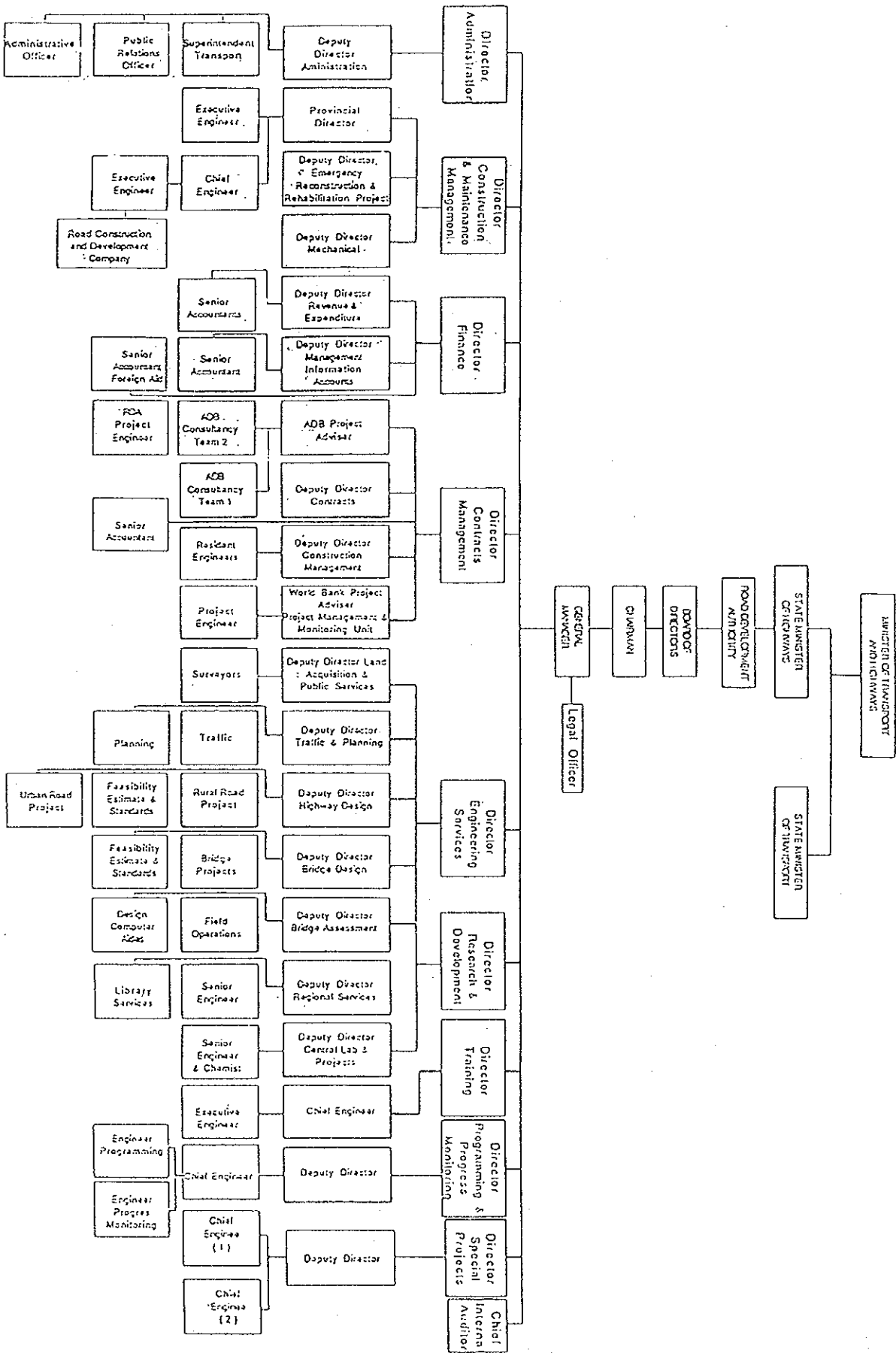
The Government of Sri Lanka assures that the matters referred in this form will be ensured for a smooth conduct of the Development Study of the Japanese Study Team.

Signed:

Titled:

On behalf of the Government of Sri Lanka

Date:



TRUNK ROAD SYSTEM - SRI LANKA





2 TERMS OF REFERENCES FOR THE MASTER PLAN STUDY ON BRIDGE  
DEVELOPMENT IN SRI LANKA





TERMS OF REFERENCES  
FOR  
THE MASTER PLAN STUDY  
ON  
BRIDGE DEVELOPMENT  
IN  
SRI LANKA

## 1 INTRODUCTION

Sri Lanka has a total area of about 66,000 sq.km and is composed of eight provinces. The main means of transportation for the inland movement of goods and passengers are essentially road-based and rail-based modes of travel. Road transport, which presently has many technical and economic advantages over the railway, has emerged as the dominant mode, accounting for 82% of passenger transport and over 90% of the total goods hauled. This trend is expected to continue in the future.

About 10,500 km of national trunk roads, out of a total length of 25,700 km of road network in Sri Lanka, are under the jurisdiction of the Road Development Authority (hereinafter referred to as the RDA). As for the approximately 15,200 km of secondary roads, they are managed by provincial councils.

The number of existing bridges on national trunk roads (A-class trunk road and B-class Road) in Sri Lanka is about 3200, which are small to medium in size. The greater part of these bridges, which were constructed before the country's independence from Britain, are more than 50-100 years old and have many structural problems, serious deterioration, narrow width and poor alignment of approaches, etc. Some of these bridges are already impossible to cross during rainy season.

These bridges, due to their poor condition, can not withstand the loads of heavy commercial vehicles, which have been increasing recently with socioeconomic development. Without improving them, the condition of these bridges will worsen in the near future. In the case where the current condition of a bridge is remarkably bad, traffic restrictions on heavy vehicles or closure to all traffic must be imposed.

Thus, in consideration of the present traffic situation and future development trends, it is important to find a solution to improve and rehabilitate the above-mentioned bridges based on a road development master plan.

The bridge improvement and rehabilitation plan will be added to the 5-year development plan.

## 2 OBJECTIVES OF THE STUDY

The objectives of the study are:

- 1) To formulate a master plan for bridge improvement and rehabilitation for A-class trunk roads.
- 2) To establish bridge inspection and maintenance manuals.

## 3 STUDY AREA

The study area will cover all A-class trunk roads in Sri Lanka

#### 4 SCOPE OF THE STUDY

In order to achieve the objectives mentioned above, the Study shall cover the following items:

- 1) Collection and review of existing data and information
  - Socioeconomic data/information (including forecasts)
  - Future development plans and financial expenditure plans related to road projects
  - Traffic data/information (including forecast)
  - Information and data of required bridges (drawings, structural analysis, specification, designing standards at age, geological data, etc.,)
  - Engineering data/information
    - \* Topographic maps
    - \* Bridge inventory
    - \* Soil and geological data
    - \* Hydrological data
    - \* Meteorological data
- 2) Review of priorities and year of execution of road development schemes, and review of the master plans for A-class trunk roads.
- 3) Selection and putting rank of priority routes of A-class trunk roads and selection of bridges required urgent rehabilitation.
- 4) Execution of preliminary design for selected bridges on high priority routes and on bridges requiring urgent rehabilitation (including reconstruction, improvement and widening)
- 5) Initial Environmental Examination: IEE
- 6) Estimation of preliminary construction costs for selected model bridges of higher priority routes and of urgent rehabilitation
- 7) Formulation of a bridge development master plan for A-class trunk roads
- 8) Formulation of an implementation program (considering budgetal allocation program of a 5-year development plan)
- 9) Evaluation and recommendations
  - Overall evaluation
  - Recommendation

## 5 SCHEDULE OF THE STUDY

The Study will be carried out in accordance with the attached tentative schedule.

## 6 REPORTS

JICA Study Team (hereinafter referred to as the Study Team) shall prepare the following reports in English and submit them to RDA.

- 1) Inception Report (20 copies)  
The Inception Report will be submitted at the commencement of the Study in Sri Lanka.
- 2) Interim Report (20 copies)  
The Interim Report will be submitted within seven (7) months of the commencement of the Study.
- 3) Draft Final Report (50 copies)  
The Draft Final Report will be submitted within eleven and a half (11.5) months of the commencement of the Study. The RDA shall provide the Study Team its comments within one (1) month after the submission of Draft Final Report.
- 4) Final Report (50 copies)  
The Final Report will be submitted within two (2) months after the receipt of the comments of the Draft Final Report from the Government of Sri Lanka and will contain all the essential recommendations, results and findings of the Study.

## 7 QUALIFICATIONS AND EXPERIENCE OF CONSULTANT

It is expected that the Study will require the services of a multi-disciplinary team of experts comprised of a team leader, traffic engineer, economist, highway engineer, structural engineer for superstructure, structural engineer for substructure and foundation, pavement engineer, material engineer, soil engineer, construction planner, etc., with all of them having the necessary background and experiences.

## 8 UNDERTAKING OF THE GOVERNMENT OF SRI LANKA

The RDA shall act as the counterpart agency to the Study Team and will also serve as a coordinating body in relations between the Study Team and other governmental and non-governmental organizations concerned.

- 1) In order to facilitate the smooth conduct of the Study, the RDA, in cooperation with other relevant organizations, shall take the following necessary measures:
  - permit the members of the Study Team to enter, leave and

necessary measures:

- permit the members of the Study Team to enter, leave and sojourn in Sri Lanka for the duration of their assignment, and exempt them from alien registration requirements and consular fees;
  - exempt the members of the Study Team from taxes, duties and any other charges on equipment, machinery and other materials brought into Sri Lanka for the conduct of the Study;
  - exempt the members of the Study Team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Study Team for their services in connection with the execution of the Study;
  - bear claims, if any arises against the members of the Study Team resulting from, occurring in the course of or otherwise connected with the discharge of their duties in the execution of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the members of the Study Team;
  - secure permission for entry into private properties or restricted areas for the conduct of the Study;
  - secure permission for the Study Team to take all necessary data and documents related to the Study out of Sri Lanka to Japan;
  - provide medical services as needed (with the cost to be charged to members of the Study Team);
  - ensure the safety of the members of the Study Team when and as is required in the course of the Study.
- 2) The RDA shall, at its own expense, provide the Study Team with the following:
- Available data and information related to the Study;
  - Counterpart personnel;
  - Suitable office space with office equipment in Colombo and the study area, if necessary;
  - Credentials or identification cards, if required.

TENTATIVE STUDY SCHEDULE

Item	Month														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Work in Sri Lanka	-----							-----							
Work in Japan	-----				-----										-----
Reports to be Presented	△							△							△
	IC/R							IT/R							F/R

Note: IC/R : Inception Report  
 IT/R : Interim Report  
 DF/R : Draft Final Report  
 F/R : Final Report

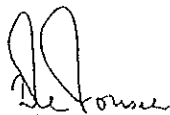
3 SCOPE OF WORK FOR MASTER PLAN STUDY ON BRIDGE  
DEVELOPMENT IN SRI RANKA



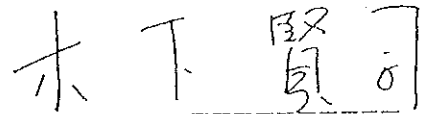


SCOPE OF WORK  
FOR  
MASTER PLAN STUDY  
ON  
BRIDGE DEVELOPMENT  
IN  
THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA  
AGREED UPON BETWEEN  
ROAD DEVELOPMENT AUTHORITY  
MINISTRY OF HEALTH, HIGHWAYS AND SOCIAL SERVICES  
AND  
JAPAN INTERNATIONAL COOPERATION AGENCY

Colombo, 8th December 1994



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K.S.C. de Fonseka  
Chairman,  
Road Development Authority  
Ministry of Health, Highways  
and Social Services



-----  
Kenji Kinoshita  
Leader,  
Preparatory Study Team  
Japan International  
Cooperation Agency

## 1. Introduction

In response to the request of the Government of the Democratic Socialist Republic of Sri Lanka (hereinafter referred to as "the Government of Sri Lanka"), the Government of Japan has decided to conduct the Master Plan Study on the Bridge Development in the Democratic Socialist Republic of Sri Lanka (hereinafter referred to as "the Study") in accordance with the relevant laws and regulations in force in Japan.

Accordingly, Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of the technical cooperation programmes of the Government of Japan, will undertake the Study in close relation with the authorities concerned of the Democratic Socialist Republic of Sri Lanka.

The present document sets forth the scope of work with regard to the Study.

## II. Objectives of the Study

The objectives of the Study are:

1. To formulate a master plan for improvement and rehabilitation of all bridges on A routes/trunk routes and selected bridges on B routes, as requested by Road Development Authority of Sri Lanka.
2. To prepare for the bridge inspection, maintenance, and rehabilitation guideline.

## III. Study Area

Study Area will cover the entire country of Sri Lanka except for the eastern and northern provinces:

## IV. Scope of the Study

In order to achieve the objectives mentioned above, the Study shall cover the following items;

- a) Collection and review of data and related information
  - (1) Socio-economic data and information
  - (2) Existing plans related to road development
  - (3) Traffic data/information
  - (4) Engineering data/information
    - a. Topographic map
    - b. Bridge inventory
    - c. Soil and geological data
    - d. Hydrological data
    - e. Meteorological data
  - (5) Other data necessary for the Study.
- b) Review of trunk road development plans
- c) Traffic demand projection and analysis
- d) Identification of the bridges requiring rehabilitation, and rating of their priority
- e) Selection of bridges for preliminary inspection (approximately 100 bridges)
- f) Preliminary Inspection of the selected bridges (Visual inspection, Measurement of dimensions, taking photos, etc.)
- g) Preparation of bridge inventory
- h) Setting up of bridge rehabilitation policy
- i) Selection of bridges for detailed inspection (approximately 10 bridges)
- j) Detailed survey of the selected bridges
- k) Preliminary rehabilitation design of the selected bridges
- l) Maintenance and management Plan
- m) Initial Environmental Examination
- n) Preliminary Cost Estimate
- o) Economic and financial analysis
- p) Implementation programme of rehabilitation of the 100 bridges to which preliminary inspection was made
- q) Preparation of bridge inspection, maintenance and rehabilitation guideline.
- r) Conclusion and recommendations .

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## V. Study Schedule

The whole work will be conducted in accordance with the attached tentative schedule. (Appendix)

## VI. Reports

JICA shall prepare and submit the following reports in English to the Government of Sri Lanka. The submission time of each report might be changed according to the study schedule.

### (1) Inception Report

Inception Report (20 copies) will be submitted at the commencement of the Study.

### (2) Interim report

Interim report (10 copies) will be submitted within seven (7) months after the commencement of the Study.

### (3) Draft Final Report

Draft final report (25 copies) will be submitted within twelve (12) months after the commencement of the study.

Road Development Authority shall provide JICA with its comments within one (1) month after the submission of Draft Final Report.

### (4) Final report

Final Report (50 copies) will be submitted within two (2) months after receipt of the comments.

## VII. UNDERTAKINGS OF THE GOVERNMENT OF SRI LANKA

1. To facilitate smooth conduct of the Study, the government of Sri Lanka shall take necessary measures;

(1) to secure the safety of the Japanese study team,

(2) to permit the members of the Japanese study team to enter, leave and sojourn in Sri Lanka for the duration of their assignment therein, and exempt them from foreign registration requirements and consular fees,

(3) to exempt the members of the Japanese study team from taxes, duties and other charges on equipment, machinery, vehicles and other materials brought into Sri Lanka for the conduct of the Study,

(4) to exempt the members of the Japanese study team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Japanese study team for their services in connection with the implementation of the Study,

(5) to provide necessary facilities to the Japanese study team for remittance as well as utilization of the funds introduced into Sri Lanka from Japan in connection with the implementation of the Study,

(6) to secure permission for entry into private properties or restricted area for the implementation of the Study,

(7) to secure permission for the Japanese study team to take all data and documents (including maps, photographs) related to the Study out of Sri Lanka to Japan,

(8) to provide medical services as needed. Its expenses will be chargeable on members of the Japanese study team.

2. The government of Sri Lanka shall bear claims, if any arises, against the members of the Japanese study team resulting from, occurring in the course of, or otherwise connected with, the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the members of the Japanese study team.

3. Road Development Authority (hereinafter referred to as "RDA") shall act as counterpart agency to the Japanese study team and also as a coordinating body in relation with other governmental and non-governmental organization concerned for the smooth implementation of the Study.

AT SR

4. RDA shall, at its own expense, provide the Japanese study team with the following, in connection with other organizations concerned:

- (1) available data and information related to the Study,
- (2) counterpart personnel,
- (3) suitable air-conditioned office space with office equipment in Colombo,
- (4) credentials or identification cards, and
- (5) appropriate number of vehicles with drivers

#### VIII. UNDERTAKINGS OF JICA

For the implementation of the Study, JICA shall take the following measures;

- (1) to dispatch, at its own expense, study team to Sri Lanka, and
- (2) to pursue technology transfer to the Sri Lanka counterpart personnel in the course of study.
















#### IX. CONSULTATION

JICA and RDA shall consult with each other in respect of any matter that may arise from or in connection with the Study.

Handwritten initials: 7. RA

APPENDIX

TENTATIVE SCHEDULE

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Work in Sri Lanka															
Work In Japan															
Report Presentation	$\Delta$ IC/R						$\Delta$ IT/R					$\Delta$ DF/R			$\Delta$ F/R

IC/R: Inception Report  
 IT/R: Interm Report  
 DF/R: Draft Final Draft  
 F/R: Final Report

Handwritten initials/signature



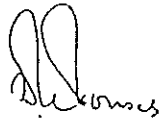


4 MINUTES OF MEETING ON THE SCOPE OF WORK FOR MASTER PLAN  
STUDEY ON BRIDGE DEVELOPMENT IN SRI LANKA

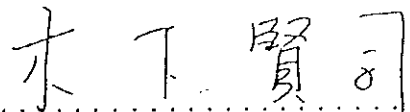


MINUTES OF MEETING  
ON  
THE SCOPE OF WORK  
FOR  
MASTER PLAN STUDY  
ON  
BRIDGE DEVELOPMENT  
IN  
THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA  
AGREED UPON BETWEEN  
ROAD DEVELOPMENT AUTHORITY  
AND  
JAPAN INTERNATIONAL COOPERATION AGENCY

COLOMBO, 8th DECEMBER 1994



.....  
K.S.C. de Fonseka  
Chairman,  
Road Development Authority,  
Ministry of Health, Highways  
& Social Services



.....  
Kenji Kinoshita  
Leader,  
Preparatory Study Team,  
Japan International Cooperation  
Agency

The Japanese Preparatory Study Team (Hereinafter referred to as "the Team"), organized by Japan International Cooperation Agency (Herein after referred to as "JICA"), and headed by Mr. Kenji Kinoshita (Vice Director, Road Division of Kinki Regional Construction Bureau, Ministry of Construction), visited Sri Lanka from November 28, 1994, in connection with the Master Plan study on Bridge Development in the Democratic Socialist Republic of Sri Lanka (Hereinafter referred to as "the Study").

The Team had a series of discussions on the Scope of Work of the Study with personnel of the Road Development Authority. A list of participants appears in attachment 1.

The Team also had discussions with the Addl. Secretary, Highways Sector, Ministry of Health, Highways and Social Services and the Chairman, Road Development Authority, in addition.

The Team also carried out field survey of several bridges.

Through these discussions, both sides agreed on the Scope of Work for the Study, and confirmed the following points:

1. Sri Lanka side provided the Team with a list of selected bridges on A routes/trunk routes, and B routes which need to be reconstructed/replaced/improved/strengthened urgently, and requested the list to be taken into consideration in the full scale study. The Team reviewed the list in the course of field survey and agreed that the list will be studied in the full scale study. The Sri Lanka side will also provide a complete list of bridges on A routes for the consideration of the Study Team.
2. The Team requested Sri Lanka side to reconfirm every content of the afore-said list of selected bridges so that the Team for full scale study would be able to proceed with the study efficiently. The reconfirmation will be given before the start of the study.

3. Both sides agreed that the bridges for detailed inspection will be selected in a manner so as to accommodate different corrective methods, and number will be approximately, ten.
4. Sri Lanka side requested the team to consider providing counterpart training in Japan. The Team agreed to convey the request to JICA headquarters.

Attendance at the meetings held between  
the Preparatory Study Team and  
Officials of the Road Development Authority

Preparatory Study Team

Mr. Kenji Kinoshita, Leader  
Mr. Seigo Nasu  
Mr. Toshihisa Hasegawa  
Mr. Tetsuo Mori  
Mr. Tadayoshi Ooshima

Advisor to RDA

Mr. Takoo Kai, JICA Expert, Engineering Services Advisor  
to RDA

RDA Personnel

Mr. D.D. Senanayake, General Manager  
Dr. G.L. Asoka. J. de Silva, Director, Engineering Services  
Mr. R.G. Rajapakse, Deputy Director, Traffic & Planning  
Mrs. H.Y. Fernando, Deputy Director, Bridge Design  
Mr. D.K. Rohitha Swarna, Senior Engineer, Bridge Design

5 QUESTIONNAIRE OF JICA PREPARATORY STUDY TEAM FOR MASTER  
PLAN STUDY ON BRIDGE DEVELOPMENT IN SRI RANKA





QUESTIONNAIRE

OF

JICA PREPARATORY STUDY TEAM

FOR

MASTER PLAN STUDY ON BRIDGE DEVELOPMENT

IN

THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

November, 1994

JAPAN INTERNATIONAL COOPERATION AGENCY

Note:

- . Please mark  for the Data/Item in the "Availability" which is available
- . Please mark  for the Data/Item in the "Availability" which is not available
- . List of required data/reports are as per attached

## I. ORGANIZATIONS CONCERNING THE IMPLEMENTATION OF THE STUDY

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAILABILITY	PLACE OF DATA AVAILABLE	
1. Agencies which are responsible for the followings: A. Road (bridge) development planning B. Road (bridge) construction C. Road (bridge) improvement/betterment D. Road (bridge) maintenance/management	1. For the National roads  2. For the Provincial roads	0	RDA  Provincial Council	List of Bridges Identified for Rehabilitation (Reconstruction/Relocation/Relocation/ Strengthening)
2. Agencies in charge of and/or concerned with the followings: A. Area conservation B. Geological data/information	1. Name of Agencies and Departments  2. Name and position of the responsible persons in charge of the Japanese Study Team to contact		Geological Survey and Mines Bureau Dept. of Coast Conservation	
3. Organization to supervise and steer the management of the study	1. Necessity of the Steering Committee and proposed member institutions		RDA	

II. TECHNICAL DATA/INFORMATION

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAILABILITY	PLACE OF DATA AVAILABLE	
1. Maps to be used for field investigation	1. Topographic maps covering the study area (of smaller scale)	0	Survey Dept.	
2. Availability of topographic maps	1. Topographic maps (1/2,000)...etc.	0	Survey Dept.	1:50,000/1:63,360
3. Geological data	1. Geological maps covering the study area	0	Geological Survey & Mines Bureau	
	2. Existing report about data/information such as: - Location of soft ground - Results of geological/soil investigation	0 0	Survey Dept. Geological Survey & Mines Bureau	
4. Meteorological data	1. Monthly Rainfall Data (Daily Rainfall Data, if possible)	0	Dept. of Meteorology	
	2. Temperature	0		
	3. Others	0		
6. Hydrological data of rivers		0	Irrigation Dept.	

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAILABILITY	PLACE OF DATA AVAILABLE	
7. Data/information on related roads in the study area.	1. Road maps	0	RDA	
	2. Bridge inventories (class, length, surface type, structure, load capacity, materials used, design standard used, design drawings, etc.) and its analytical study on damages and portion	0	RDA	
	3. Record of past disaster (flood, damages, etc.)		RDA	
8. Traffic survey system and any analytical studies if available	1. Location of periodic traffic count stations in the Study Area	0	RDA	
	2. Period (e.g. once a year, seasonal, etc.)	0		
9. Traffic data on the related roads and any analytical study if available	1. Traffic volume by vehicle types	0	RDA	
	2. No. of registered vehicles by provinces and cities	0	Commissioner of Motor Traffic	
	3. Record of traffic accidents (type, causes, location, etc.)	0	Traffic Police	
10. Land use plans and maps		0	Survey Dept.	

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAILABILITY	PLACE OF DATA AVAILABLE	
11. Specification and standard	1. Geometric standard	0	RDA	
	2. Bridge standard	0	RDA	
	3. Pavement standard	0	RDA	
	4. Environmental quality standard		Central Environment Authority RDA	
	5. Maintenance manual		RDA	
	6. Others		RDA	
12. Transportation Network Map	1. Network maps and capacity of national transport system, roads, railways, commercial flights	0	Survey Dept./Dept. of Civil Aviation	
	2. Traffic flow data and forecasts of cargo/passengers by each mode	0	Transport Study & Planning Centre(TSPC)/RDA	
	3. Transportation cost of each mode (by type of vehicle)	0	TSPC	
	4. Development/improvement policies	0	RDA/TSPC	
	5. Related materials, if any national transport on studies. etc	0	TSPC	

ITEM	DESCRIPTION	AVAILABILITY			NAME OF MATERIALS
		AVAILABILITY	PLACE OF DATA AVAILABLE		
13. Reports/information of the road and bridge development projects closely related to the study	1. Intersection improvement plan	0	RDA		
	2. Widening plan for major road	0	RDA		
	3. Bridge plan - New construction - Re-construction	0	RDA RDA		Printed estimates for Budget Proposals
14. Bridge related budget	1. Bridge construction budget	0	RDA		Printed estimates for Budget Proposals
	2. Bridge maintenance budget	0	RDA		Printed estimates for Budget Proposals
15. Foreign aides concerned to road/bridge developments  ↓ 12/9	1. Country/organization	0	RDA		ADB, World Bank, OECF
	2. Amount of budget its objectives	0	RDA		
	3. Outline of the projects	0	RDA		1st, 2nd & 3rd ADB 1st, 2nd & 3rd WB OECF maintenance programme, Baseline Road Project
16. Bridge related cost	1. Construction cost by type of bridge & location	0	RDA		
	2. Maintenance cost by type of bridge & construction	0	RDA		

III. SOCIO-ECONOMIC DATA/INFORMATION

6

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAILABILITY	PLACE OF DATA AVAILABLE	
1. Latest national socio-economic indices	1. GNP and GDP	0	)	
	2. Population	0	)	
	3. Past and future population growth rate		)	
	4. Industrial, agricultural and mining products (by main sort)		) Central Bank/ Dept. of Census & Statistics	
	5. Foreign trade (quantity and value)	0	)	
	6. Others		)	
2. Socio-economic indices of each province and city in the study area	1. Population	0	) Central Bank/ Dept. of Census and Statistics	
	2. Labour force and products in agriculture, mining, industry and commerce	0	)	
	3. No. of tourist	0	) Tourist Board	

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAILABILITY	PLACE OF DATA AVAILABLE	
3. Existing development plans and reports	1. Economic development plans		Dept. of National Planning	
	2. Development Master Plan of the whole country which describes the status of each plan or each transportation system including national highways		Dept. of National Planning	
	3. Transportation development plans			
	4. Industrial development plans		Ministry of Industries	
	5. Mining and agricultural development plans		Geological Survey & Mines Bureau/Dept. of Agriculture	
	6. Forecast of socio-economic indicators in each province		Central Bank	
4. Existing and on-going bridge development plans and bridge development projects	1. Design, implementation schedule and current project status		RDA	PIP



IV. ENVIRONMENTAL ISSUES

8

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAILABILITY	PLACE OF DATA AVAILABLE	
1. Legislation	<ol style="list-style-type: none"> <li>1. Law/guidelines on environmental impact assessment</li> <li>2. Quality standards</li> </ol>		Central Environment Authority (CEA)	
2. International conventions on environmental conservation	<ol style="list-style-type: none"> <li>1. Bilateral convention</li> <li>2. Multilateral convention</li> </ol>		CEA CEA	

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAILABILITY	PLACE OF DATA AVAILABLE	
3. Present situation of the project area	1. Natural environment	)	) Dept. of	
	Availability of meteorological data	)	) Surveyor	
	Availability of land use and vegetation map	)	) Geological	
	History of natural disaster, landslide earthquake and flood	)	) Survey &	
	Areas affected by soil erosion	)	) Mines Bureau	
	Change of water level of rivers and lakes in recent years	)	)	
	Location of environmentally vulnerable areas such as wetland	)	)	
	Species of valuable animals and plants living in the project area	)	)	
	Location of particular areas officially protected such as national parks	)	)	
	Distribution of important landscape or scenery for	)	)	
			Irrigation Dept.	
			Forest Dept. Dept. of Wild Life	
			Forest Dept., Dept. of National Museum	
			Forest Dept., Dept. of Wild Life	
			Tourist Board	

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAIL ABILI TY	PLACE OF DATA AVAILABLE	
3. Present situation of the project area	2. Quality of life Present air quality Regulation on emission gas Present water quality Regulation on effluent Present condition of soil contamination Regulation for prevention of soil contamination Present condition of noise and vibration Regulation for prevention of noise and vibration		CEA	

V. OTHER INFORMATION

11

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAILABILITY	PLACE OF DATA AVAILABLE	
1. Future budgetary plan for the implementation of the project				
2. Any specific restrictions related to the study		No		
3. Availability of the Government's equipment/instruments/apparatus for the study	<p>1. List of equipment/instruments/apparatus which are available for the study by the following category with the following information:</p> <p>a. Category</p> <ul style="list-style-type: none"> <li>- Instrument for geodetic survey</li> <li>- Apparatus for geological/soil investigation</li> <li>- Apparatus for traffic survey</li> <li>- Computer</li> <li>- Service vehicle</li> <li>- Others</li> </ul> <p>b. Information</p> <ul style="list-style-type: none"> <li>- Name</li> <li>- Type (or model/maker)</li> <li>- Characteristics (or capacity)</li> <li>- No. of units</li> <li>- Condition</li> </ul>		<p>RDA</p> <p>RDA/ Research &amp; Development Division of RDA/Private Firms too may have to be hired</p> <p>RDA</p>	

6 RDA(Rord Development Authority) BRIDGE INVENTORY FORM



Name of Bridge : ..... Route No./Name of Rd.: .....  
 Name of River : ..... Class of Road: .....  
 Function of Bridge: ..... Bridge No. .... (Miles) ..... (KM).  
 Year of construction: ..... Province : .....  
 Location of Bridge. } ..... District : .....  
 Dist. to closest town } ..... E.E.'s Division: .....  
 Date of inspection: ..... Weather condition on } .....  
 date of inspection }

General Dimensions/Observations

Overall length of bridge : .....  
 Overall width of deck : .....  
 Clear carriageway : .....  
 Kerb/foot walk width : .....  
 No. of openings : .....  
 Clear span of each : .....  
 Thickness of piers at capping level: Pier 1 ..... Pier 2 ..... Pier 3 .....  
 Spans skew/square : .....  
 Skew angle : .....  
 Height from invert to underside of bridge : .....  
 Height from O.W.L. to underside of bridge : .....  
 Width of face of Abutment : .....  
 Highest flood level w.r.t. underside of bridge : .....  
 Normal flood level w.r.t. underside of bridge : .....  
 Head room : .....  
 Navigable : .....  
 Any services carried across the bridge : .....  
 Bed material of the river/rock outcrops: .....

1. Type of construction: Steel/Concrete/Brick/Stone/Timber: .....

\* 2. Super structure (a) Main girders: .....  
 (b) Deck : .....  
 (c) Bearings: .....  
 (d) Road rails/parapets: .....

3. Sub structure (state } (a) Piers : .....  
 material of construction } (b) Abutments : .....  
 (c) Wing Walls : .....

4. Foundation (state, } (a) Abutment : .....  
 whether spread, omissions } (b) Piers : .....  
 or piles steel/timber/ } (c) Wing Walls : .....  
 conc.)

Other observations and comments:- (2)

- 1. Scouring of riverbed, river meandering etc. (give brief description) :
- 2. Behaviour of the structure under normal traffic
  - (a) Vibrations-little/moderate/excessive :
  - (b) Deflection-little/moderate/excessive ;
- 3. Remedial measures carried out since last bridge inspection 3\* :
- 4. Remedial measures proposed 3\* :
- 5. General comments & recommendations 4\* :

Sketch:

(attach additional sheets if necessary)

Signature of inspection officer,  
E.E. ....

Date: .....

Signature of checking officer,  
C.E. ....

Date: .....

For Office Use Only (in Bridge Designs Office)

Instructions on filling etc.

Senior Engineer/Bridge Inventor

Date:

(Contd.3,



Road Development Authority - Bridge Inspection  
Report

---

Form No: RDA/27

Bridge No. & Name of Road: .....

Bridge Name: ..... Class/route No.: .....

E.E's Division: ..... C.E's Region: .....

Date of inspection: ..... Weather condition: .....

Condition Report

Name/Type of component(s) or Part(s)	Classification/Type 1* & extent of defect(s)	Condition Rating 2*			
		G	F	P	VP
Foundations					
Invert					
Piers					
Abutments					
Wing Walls					
Retaining walls/ Rivetments					
Approaches					
Bearings					
Main beams					
Transverse beams					
Diaphragms/bracings					
Deck					
Arch ring					
Spandrels					
Tie rods					
Drainage, system					
Weep Holes					
Surfacing					
Service ducts					
Expansion joints					
Parapets/Handrails					
Footwalks and Kerbs					

\* NOTE

2. (a) Type of Main girders : eg, Steel trussess, R.S.JJ, Plated steel girders, concrete beams or R.C.C. - spaced or side by side, Timber trusses.
2. (b) Type of Deck: eg. concrete filling or tar macadam over corrugated decking plates/buckle plates (state whether decking/buckle plates, span over cross girders or main girders) or R.C. slab, P.S.C. beam slab, timber deck over steel girders.
2. (c) Elastomeric bearings (plain/laminated) steel bearing (sliding/fixed), concrete bearings.
2. (d) Precast or M.S. Posts & GI pipes or M.S. Angles.

Signature of Inspection Officer  
(C.E./E.E.)

CP/-

NOTE 1\*

1. Classification/Type of Defects:

Defects may be classified or identified into the following types:

- (a) Concrete members or components: Scaling, Cracking, Spalling, Exposure and corrosion of reinforcement, excessive deflection of members, wear of surfaces.
- (b) Steel, Wrought iron or Cast iron members or components: Rust and corrosion, Buckling/excessive deformation of members, cracking marine growth in under water components (near sea).
- (c) Timber members or components: Decay, vermin attack, weathering, cracking, warping, excessive deflection of members, wear of surface.
- (d) Rubble/Stone Masonry: Weathering, spalling, splitting and cracking, vegetation growth, loose stones.
- (e) Joints & connections: Loose or broken joints or connections
- (f) Other defects:
  - (i) Blocked/malfunctioning drainage outlets, weepholes
  - (ii) Blocked/malfunctioning bearings
  - (iii) Malfunctioning bearings
  - (iv) Damage due to accidents or vandalism
  - (v) Settlement/movement of piers, abutments, approaches
  - (vi) Poor surface condition of approaches. Defects are not limited to the above any other defect observed should be noted.

NOTE 2\*

'G' (Good) - no significant defect

'F' (Fair) - minor defects of non urgent nature

'P' (Poor) - defects of an unacceptable nature which should be included for attention within the next annual maintenance programme.

'VP' (Very Poor) - defects which needs attention immediately where action to be taken within this financial year.

NOTE 3\*

Remedial measures mean maintenance, repairs, strengthening of the structure.

NOTE 4\*

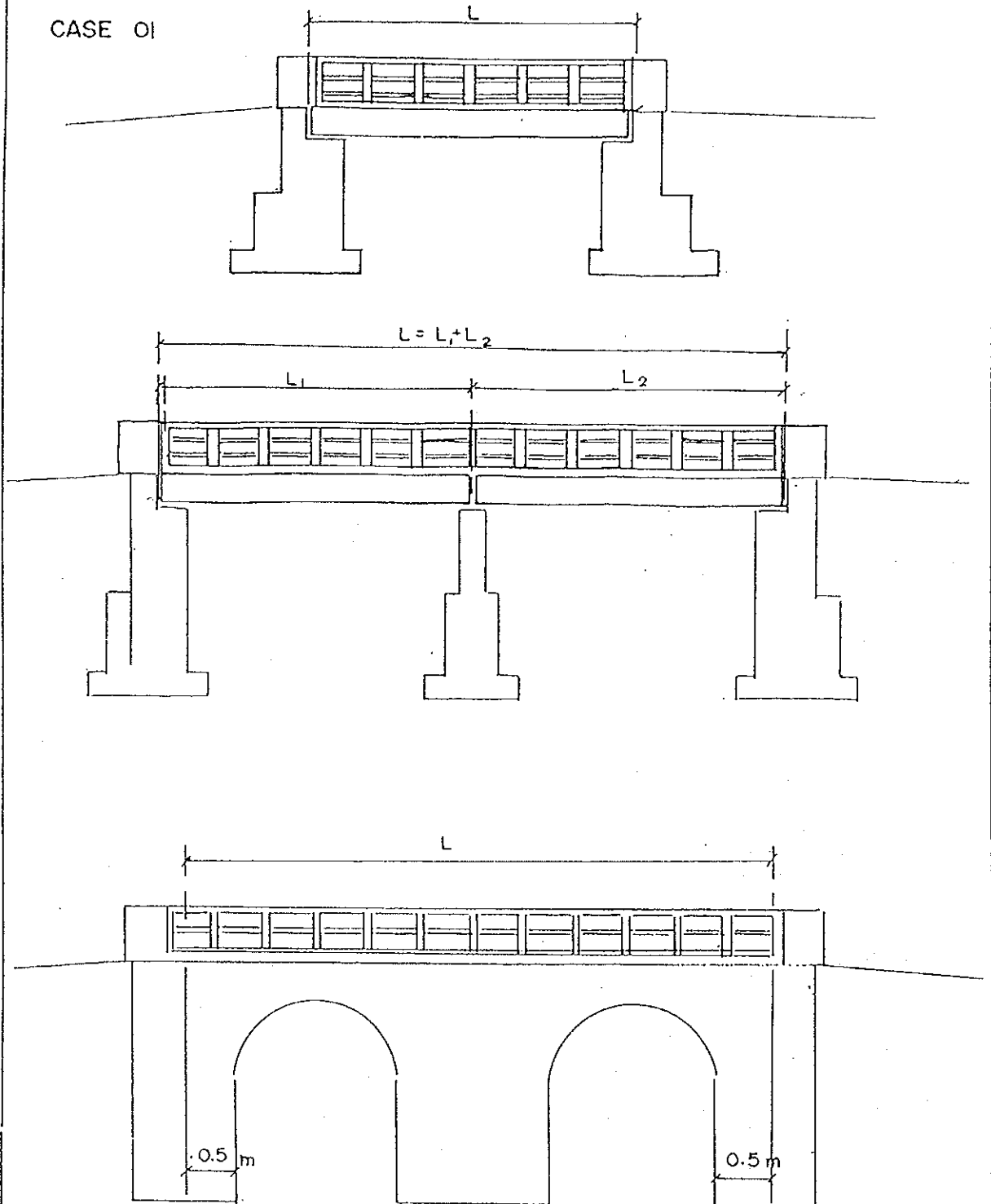
Other comments and observations may be made and recommendations made based on the condition of the bridge on urgent measures to be taken to safeguard the structure and the road users (if considered necessary)  
eg. restriction of loads, prohibition of certain class (es) of vehicles, closure of bridge/the need to re-construct the bridge.

yr/-

Matale C.E.'s office

BRIDGE LENGTH (L)  
( $L \geq 3.0\text{m}$ )

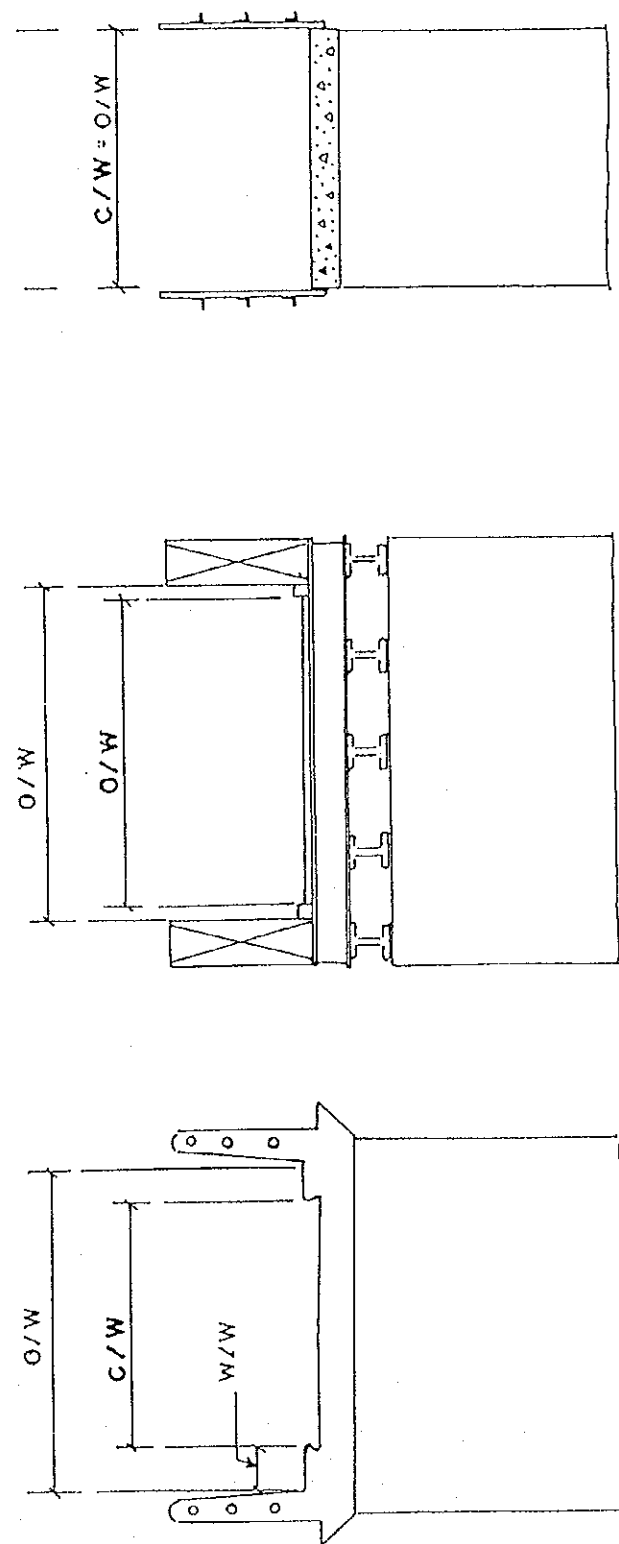
CASE 01



LONGITUDINAL SECTION

P.T.O.

OVERALL WIDTH (O/W)  
 CARRIAGE WAY WIDTH (C/W)  
 WALK WAY (W/W)



CROSS SECTION OF THE BRIDGE

Table - 3 (1/2)

Road Development Authority Bridges Inventory Form Form No RDI/26

Name of Bridge: Horana  
 District: Kalutara  
 Province: Western  
 Division: Horana  
 Date of inspection: 27-2-59  
 Weather condition on date of inspection: Dry

General Dimensions/Observations:

Overall length of bridge: 225' 0"  
 Overall width of deck: 11' 0"  
 Clear carriageway: 11' 0"  
 Kerb/foot walk width: 3'  
 No. of openings: 3  
 Clear span of each: 73' 0"  
152' 0"  
31' 0"

Additional report attached with inspection notes made by Mr. Chandrasekara. Mr. Chandrasekara's notes regarding the bridge are attached.

Thickness of piers at capping level: Pier 1. 8' 0" Pier 2. 8' 0" Pier 3. 8' 0"  
 Spans skew/square: Sq. span  
 Skew Angle: ---  
 Height from invert to underside of bridge: Not known. may be 7' 6"  
 Height from O.W.L. to underside of bridge: 25' 0"  
 Width of face of abutment: 26' 0"  
 Highest flood level w.r.t. underside of bridge: 6' 0"  
 Normal flood level w.r.t. underside of bridge: 12' 0"  
 High road: 25' 0"

Traversable: Y/N  
 Day services carried across the bridge: Bus, Rickshaw  
 Bed material of the river/rock outcrops: Rock

1. Type of Construction: Steel/Concrete/Brick/Stone/Timber: Steel  
 2. Super Structure (a) Main girders: Steel  
 (b) Deck: Deck slab supported by P.S.P's  
 (c) Bearings: ---  
 (d) Hand rails/ parapets: trusses

3. Sub structure (state material of construction) (a) Piers: Caissons  
 (b) Abutments: Dressed stones  
 (c) Wing walls: Dressed stones


4. Foundation (state, whether spread, caissons or piles steel/timber/conc.) (a) Abutment: Conc. Spread  
 (b) Piers: Conc.  
 (c) Wing walls: Conc. Spread

1  
3  
3

(2/2)

\* NOTE

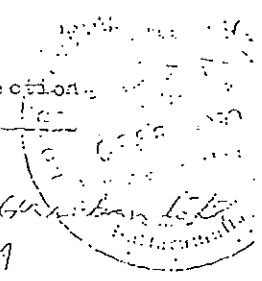
- 2 (a) Type of Main Girder: eg: Steel trusses, R.S.JJ,  
~~Plated steel girders, concrete beams or R.C. spaced~~  
~~side by side, Fish trusses.~~
- 2 (b) Type of deck: eg, concrete fillings or ~~tan~~ ~~macadam~~ over  
corrugated decking plates/buckle plates (state whether  
decking/ buckle plates span over cross girders or main  
girders) or R.C. slab, I.S.C. beam slab, timber deck over  
steel girders.
- 2 (c) Elastomeric bearings (plain/laminated ) steel bearing  
(sliding/ fixed) concrete bearings.
- 2 (d) Precast or M.S. Posts & CI pipes or M.S. Angles.

  
Signature of Inspection Officer  
(S.E./E.E.)

SI/

Table 4 (1/3)

Road Development Authority - Bridge Inspection Report



Form No: RDA/27

Bridge No. & Name of Road : 377 Kolaria Ghat - Ghorashan Rd.

Bridge Name : Class/route No.: A

E.E.'s Division : Elphing C.E.'s Region : Ghatia

Date of inspection : 31-01-89 Weather condition : Good

Condition Report

Name/Type of component(s) or Part(s)	Classification/Type 1* & extent of defect(s)	Condition Rating: 2*			
		G	F	P	VP
Foundations	Not Known				
Invert					
Piers					
Abutments	Large amount of crack present			X	
Wing Walls	Not known			X	
Retaining walls/ Rivements	-				
Approaches	Depression at abutment end			X	
Bearings					
Main beams	Not known			X	
Transverse beams					
Diaphragms/bracings	Not known			X	
Deck	Not satisfactory				
Arch ring					
Spandrels					
Tie rods					
Drainage system					
Warp Holes	Not satisfactory				
Surfacing	Cracking			X	
Service ducts					
Expansion joints					
Parapets/Handrails	End of concrete			X	
Footwalks and Kerbs	-				

(Contd., P. 2)



4 (2/3)

Other observations and comments

1. Scouring of riverbed; river meandering etc. (give brief description)
2. Behaviour of the structure under normal traffic
  - (a) Vibrations - little/moderate/excessive
  - (b) Deflection - little/moderate/excessive
3. Remedial measures carried out since last bridge inspection 3\*
4. Remedial measures proposed 3\*
5. General comments & recommendations 4\*

Scouring to a certain extent

negligible  
little

found some slight holes

Sketch :  
(attach additional sheets if necessary)

Signature of inspection officer,  
E.E. *[Signature]*  
Date: *11/02/89*

Signature of checking officer,  
C.E. *[Signature]*  
Date: *11/02/89*

For Office Use Only (in Bridge Design Office)

Instructions on filling etc.

Senior Engineer/Bridge Inventory  
Date:

(Contd., P. 3)

Table 24 (2/3)

NOTE 1\*

1. Classification/Type of Defects

Defects may be classified or identified into the following types:

- (a) Concrete members or components : Scaling, Cracking, Spalling, Exposure and corrosion of reinforcement, excessive deflection of members, wear of surfaces.
- (b) Steel, Wrought iron or Cast iron members or components : Rust and corrosion, Buckling/excessive deformation of members, cracking marine growth in under water components (near sea).
- (c) Timber members or components : Decay, vermin attack, weathering cracking, warping, excessive deflection of members, wear of surface.
- (d) Rubble/Stone Masonry : Weathering, spalling, splitting and cracking, vegetation growth, loose stones.
- (e) Joints & connections : Loose or broken joints or connections
- (f) Other defects :
  - (i) Blocked/malfunctioning drainage outlets, weepholes
  - (ii) Blocked/malfunctioning bearings
  - (iii) Malfunctioning bearings
  - (iv) Damage due to accidents or Vandalism
  - (v) Settlement/movement of piers, abutments, approaches
  - (vi) Poor surface condition of approaches. Defects are not limited to the above any other defect observed should be noted.

NOTE 2\*

- |   |   |
|---|---|
| 'G' (Good) - no significant defect  | 'F' (Fair) - minor defect of non urgent nature  |
| 'P' (Poor) - defects of an unacceptable nature which should be included for attention within the next annual maintenance programme. | 'VP' (Very Poor) - defect, which needs attention immediately where action to be taken within this financial year. |

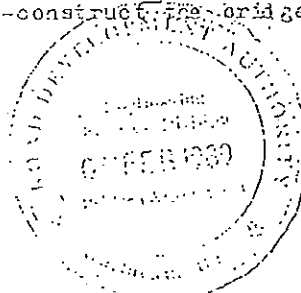
NOTE 3\*

Remedial measures mean maintenance, repairs, strengthening of the structure.

NOTE 4\*

Other comments and observations may be made and recommendations made based on the condition of the bridge on urgent measures to be taken to safeguard the structure and the road users (if considered necessary) eg. restriction of loads, prohibition of certain class (as) of vehicles, closure of bridge/the need to re-construct the bridge.

GP/-



## 7 RDA提案の問題橋梁約200橋のリスト



資料 問題橋梁約200橋のリスト by RDA

X Bridges Under Construction

SER NO	BR. NO. ROUTE NO	NAME OF ROAD	CE REG/DIST	YEAR OF CONST.	ADT (2pd)	LENGTH(m)		EXISTING WIDTH		PROPOSED WIDT		TYPE OF BRIDGE	EXISTING DEFECT/S	PROPOSED TREATMENT	
						EXST	PROP	CARR.	OVRAL	CARR.	OVRAL				
1	61/1	AA001	Colombo - Galle - Hambantota - Wellawaya	GL	4620	30.00	30.00	7.30	10.50	7.40	10.40	RCC	Narrow Da	Widen/Redec	
2	75/1km	AA010	Katugastota - Kurunegala - Puttalam	KR	2960	122.40	120.00	5.57	5.57	6.80	9.20	Stl.Grdr.	Narrow	Widen/Redec	
3	25/5km	AA017	Galle - Deniyaya - Madampe	NR	1200	11.00	11.00	3.20	3.50	7.40	9.80	Stl.Grdr.	Weak/Narr	Reconst	
X	7/7	B039	Balengoda - Rasagala - Uwella	RT	400	15.50	16.00	3.20		6.70	8.60	Bailey	-	Reconst	
X	14/7	B240	Kotte - Bope	CL	4770	5.00	7.10	3.60	4.60	7.40	10.40	Stl.Grdr.	Weak/Narr	Reconst	
X	38/3km	B322	Negombo - Giriulla	GH	2310	99.00	93.00	4.95	4.95	7.40	11.00	Bailey	-	Reconst/Rep	
7	20/4km	B425	Tudella - Panunugama - Talahena - Negombo	GH	1380	139.00	139.00	5.85	5.85	7.40	11.00	RCC	Weak	Widen/Redec	
8	12/3	B427	Udawalawe - Tanaamalwila	WN	550	15.90	49.00	5.20	5.20	6.80	9.20	causeway	Submersib	Repl	
X	8/7	B471	Wellisada - Kirikles	EM		30.50	27.00	2.60	2.75	7.40	10.30	Stl.Trs.	Narrow	Reconst	
X	4/2	B478	Wilakatupeha-Ganewattha-Kubukgete	SR	240	51.80	54.00	4.50	4.50	6.80	9.20	Stl.Trs.	Weak/Narr	Reconst	
X	133/1km	AA005	Peradeniya - Badulla - Cherkaladi	BN	1905	1213	48.00	48.00	4.25	4.25	7.40	11.70	Stl.Trs.	Weak/Narr	Widen
12	49/6 km	AA008	Panadura - Nambapana - Ratnapura	RT	1920	1350	13.80	14.00	3.15	3.60	7.40	10.60	Stl.Trs.	Narrow	Widen/Redec
X	4/5	B056	Bibile - Medagama - Makkala	WN	740	53.30	40.50	5.50	5.50	6.80	9.20	causeway	Submersib	Repl	
14	10/5	B056	Bibile - Medagama - Makkala	BN	740	30.50	65.00	5.50	5.50	7.40	10.40	causeway	Submersib	Repl	
X	7/3	B057	Bibile - Uraniya - Mahiyangana	BN	400	16.76	27.00	5.80	5.80	6.80	9.20	causeway	Narrow/Su	Repl	
16	35/8	B084	Colombo - Horana	CL	4200	7.69	9.31	4.34	4.54	7.40	9.80	Stl.Grdr.	Weak/Narr	Reconst	
17	2/3	B137	Gin Oya - Bolawatta - Dankotuwa	CH	600	10.50	11.00	3.40	3.40	6.80	9.20	Stl.Grdr.	Weak/Narr	Reconst	
18	11/1	B158	Horawela - Pelewatta - Pitigala	KL	950	29.70	30.00	3.40	3.80	6.80	9.20	Stl.Grdr.	Narrow	Reconst/Wid	
19	6/10	B207	Katukurunda - Heboda	KL	1890	970	33.00	40.00	4.30	4.30	6.80	9.20	Stl.Trs.	Weak/Narr	Reconst
20	16/6	B264	Kallawapitiya - Rambodagalla - Keppetigoll	KR	1500	14.00	14.00	4.00	4.27	7.40	9.80	Stl.Grdr.	Narrow	Reconst	
21	8/1km	B421	Tiruwanaketiya - Agalawatta	RT	1450	36.40	36.90	4.40	4.40	6.80	9.20	Stl.Trs.	Narrow	Reconst	
22	1/1km	B431	Ulapane - Pussellawa	KN	500	80.00	80.00	3.00	3.00	7.40	9.80	Bailey	Teap Brid	Reconst/Rep	
23	5/3	B435	Urugodawatta - Ambatale	CL	1898	10910	16.00	20.00	5.50	5.50	7.40	9.80	Stl.Grdr.	Narrow	Reconst
24	12/4	B454	Wanduramba - Etunale - Yakkatuwa	GL	500	11.00	12.00	2.75	3.70	6.80	9.20	Timber	Weak/Narr	Reconst	
25	4/10	B454	Wanduramba - Etunale - Yakkatuwa	GL	500	25.30	27.00	3.00	3.10	6.80	9.20	RCC	Weak/Narr	Reconst	
X	15/1	B462	Wattegama - Matale	ML	820	20.00	20.00	4.40	5.20	7.40	9.80	Stl.Trs.	Narrow	Widen/Redec	
27	87/1km	AA002	Colombo - Galle - Hambantota - Wellawaya	GL	1898	4620	33.00	33.00	6.70	6.70	7.40	9.80	Masonry Arch	Weak/Narr	Reconst
28	81/1km	AA002	Colombo - Galle - Hambantota - Wellawaya	GL	1932	4620	46.00	54.40	5.50	5.50	7.40	11.40	Stl.Trs.	Weak/Narr	Reconst
29	72/3km	AA002	Colombo - Galle - Hambantota - Wellawaya	GL	1929	4620	7.60	16.28	5.50	5.50	7.40	10.40	Stl.Grdr.	Narrow	Reconst
30	5/5	B014	Ambalangoda - Elpitiya - Pitigala	GL	1390	20.60		5.50	5.65			Stl.Grdr.	Weak	Reconst	
31	3/3	B114	Elpitiya - Opatha - Avittawa	GL	480	12.20		3.05	3.50			Stl.Grdr.	Weak	Reconst	
32	2/1	B137	Gin Oya - Bolawatta - Dankotuwa	CH	600	10.30	11.00	3.80	3.80	6.80	9.20	Stl.Grdr.	Narrow	Reconst	
33	12/3km	B157	Horana - Angurumatota - Aluthgama	KL	750	69.00	71.50	3.25	3.60	6.80	9.20	Stl.Trs.	Weak/Narr	Reconst	
34	5/1	B264	Kallawapitiya - Rambodagalla - Keppetigoll	KR	700	27.00	27.00	4.25	5.57	6.80	9.20	Stl.Trs.	Weak/Narr	Widen/Redec	
35	2/16	B454	Wanduramba - Etunale - Yakkatuwa	GL	1945	500	23.60	24.00	3.00	3.25	6.80	9.20	RCC	Narrow	Reconst
36	48/1km	AA010	Katugastota - Kurunegala - Puttalam	KR	2960	31.20	32.00	5.20	5.20	7.40	10.40	Stl.Grdr.	Weak/Narr	Reconst	
37	17/3	B084	Colombo - Horana	CL	4200	10.20	10.74	4.55	4.70	7.40	9.80	Bailey	Narrow	Widen/Redec	
38	5/5	B265	Malwala - Carney	RT	300	15.55	19.70	3.20	4.35	6.80	9.20	Tieber	Weak/Narr	Reconst	
39	13/4	B349	Palavi - Kalpitiya	CH	1927	1150	23.10	23.00	3.85	4.45	6.80	9.20	Stl.Grdr.	Weak/Narr	Widen/Redec
40	66/2km	B421	Tiruwanaketiya - Agalawatta	KL	1930	870	21.00	21.00	4.65	4.65	6.80	9.20	Stl.Trs.	Weak/Narr	Reconst
41	10/3	B454	Wanduramba - Etunale - Yakkatuwa	GL	1924	450	7.00	12.00	2.74	3.80	6.80	9.20	RCC	Weak/Narr	Reconst
42	3/3	B454	Weerawila - Tissu - Kataragama	BN	1200	60.00	60.00	4.20		7.40	9.80	Stl.Trs.	Narrow	Reconst	
43	206/9km	AA004	Colombo - Ratnapura - Wellawaya - Battical	BN	270	34.00	34.00	4.90		7.40	9.80	Was Arch	Narrow	Widen/Redec	
44	196/7km	AA004	Colombo - Ratnapura - Wellawaya - Battical	BN	295	33.00	33.00	4.50	7.00	7.40	9.80	Stl.Grdr.	Narrow	Widen/Redec	
45	206/10km	AA004	Colombo - Ratnapura - Wellawaya - Battical	BN	270	37.00	37.00	3.96	4.90	7.40	9.80	Was Arch	Narrow	Widen/Redec	
46	73/5	AA007	Avissawella - Hatton - Nuwara Eliya	NR	1380	12.20	13.00	6.20	6.50	6.80	9.20	Arch	Narrow	Reconst	
47	70/8	AA007	Avissawella - Hatton - Nuwara Eliya	NR	1330	12.20	13.00	5.20	6.00	6.80	9.20	Arch	Narrow	Reconst	
48	25/4km	AA008	Panadura - Nambapana - Ratnapura	KL	1929	3200	23.00	23.00	5.50	5.50	7.40	9.80	Stl.Trs.	Narrow	Widen/Redec
49	25/3km	AA008	Panadura - Nambapana - Ratnapura	KL	1930	3200	13.00	13.00	4.20	4.20	7.40	9.80	Stl.Trs.	Narrow	Widen/Redec
50	35/1km	AA008	Panadura - Nambapana - Ratnapura	KL	1940	3200	33.00	33.00	3.80	4.05	7.40	9.80	Stl.Trs.	Narrow	Reconst
51	24/1km	AA008	Panadura - Nambapana - Ratnapura	KL	1929	3200	13.60	13.00	5.40	6.00	7.40	9.80	Stl.Trs.	Narrow	Widen/Redec
52	2/2km	AA017	Galle - Deniyaya - Madampe	GL	1250	10.40	10.00	4.30	4.40	6.30	9.20	RSJ/TK	Narrow/Da	Reconst	

SER NO	BR. NO.	ROUTE NO	NAME OF ROAD	CE REG/DIST	YEAR OF CONST.	ADT (vpd)	LENGTH(m)		EXISTING WIDTH		PROPOSED WIDT		TYPE OF BRIDGE	EXISTING DEFECT/S	PROPOSED TREATMENT
							EXIST	PROP	CARR.	OVRL	CARR.	OVRL			
53	36/3k	AA021	Kegalle - Bolathkohepitiya - Karawanella	KG	1899	1200	38.50	40.00	3.38	6.05	7.40	9.30	Stl.Trs.	Narrow	Widen/Redec
54	19/2	B024	Colombo - Horana	XL		4200	11.00	11.00	5.50	5.50	7.40	11.00	RSJ/RCC	Narrow	Widen/Redec
55	8/10k	B093	Ochiowita - Deraniyagala - Noori	KG		700	21.00	22.00	4.50	4.50	6.30	9.20	Stl.Grdr.	Narrow	Widen/Redec
56	3/7k	B093	Ochiowita - Deraniyagala - Noori	KG		700	11.00	11.00	4.50	4.50	6.80	9.20	Stl.Grdr.	Narrow	Widen/Redec
57	2/2	B116	Ebbilimeegasa - Daulagala - Penideniya	KN		600	10.00	10.00	4.50		6.80	9.20	Stl.Grdr.	Narrow	Widen/Redec
58	44/3k	B157	Horana - Angurawatota - Aluthgana	XL	1930	750	10.35	10.00	3.65	4.00	6.80	9.20	Stl.Grdr.	Weak/Narr	Reconst
59	43/4k	B157	Horana - Angurawatota - Aluthgana	XL	1924	750	46.00	46.00	3.23	3.65	6.80	9.20	Stl.Grdr.	Narrow	Reconst
60	10/3	B300	Muttetugsa - Hiripitiya	KR		650	6.70	12.50	4.60	4.60	6.80	9.20	Causeway	Narrow/su	Repl
61	4/9	B379	Puttalaa - Marichchikade	CH		300	35.00	36.00	4.10	4.10	6.80	9.20	Bailey	Flood dan	Reconst
62	29/3k	B423	Tonigala - Kalaweva - Galewela	AN		320	15.00	49.00	3.20	3.20	6.80	9.20	Causeway	Narrow/Su	Repl
63	27/2k	B423	Tonigala - Kalaweva - Galewela	AN		320	7.00	32.50	3.60	3.60	6.80	9.20	Causeway	Narrow/Su	Repl
64	24/3k	AA011	Maradankadawela - Habarana - Tirikkondiyadi	AN		850	11.00	11.00	5.00	5.60	7.40	9.80	Stl.Grdr.	Weak/Narr	Reconst
66	7/1k	B111	Ekala - Kotadeniyaya	GH	1930	3750	37.20	42.00	5.50	6.40	7.40	11.00	Stl.Grdr.	Poor alin	Reconst
67	21/2k	B157	Horana - Angurawatota - Aluthgana	KL	1960	750	19.00	20.00	4.00	4.00	6.80	9.20	RSJ/RCC	Narrow	Widen/Redec
68	1/5	B164	Jaffna Junction - Sri Maha Bodhi	AN		2430	97.70	46.00	4.90	6.00	6.00		Stl.Grdr.	Weak/Narr	Repl/Stl sp
69	3/6	B188	Kaluagala - Labugana	CL		500	13.60	16.00	3.00	3.60	6.80	9.20	Stl.Trs.	Narrow	Widen/Redec
70	3/6k	B295	Koratuwa-Piliyandala	CL	1960	7260	43.50	45.00	5.50	6.10	7.40	11.00	RSJ/RCS	Narrow	Reconst
71	1/5	B277	Keeriankalli - Andigawa	CH		200	15.20	16.00	5.20		6.80	9.20	Stl.Trs.	Weak	Reconst
72	6/6	B243	Labudawa - Wanduramba - Sandarawela	GL		2210	12.00	12.00	4.00	4.20	6.80	9.20	Stl.Trs.	Dangd	Reconst
73	18/2	B423	Tonigala - Kalaweva - Galewela	ML		310	7.00	9.00	3.30	3.90	6.80	9.20	RCC	Weak/Narr	Reconst
74	6/3k	B466	Veligasa - Tellijjawela	MR		600	10.20	10.00	5.70	5.70	6.80	9.20	Stl.Trs.	Narrow	Reconst
75	62/2k	AA002	Colombo - Galle - Habantota - Wellawaya	GL		4620	40.50		5.35	7.00			Stl.Trs.	Weak	Reconst/Rea
76	62/1k	AA002	Colombo - Galle - Habantota - Wellawaya	GL		4620	91.00		5.50	7.70	7.40	12.00	Stl.Trs.	Weak	Reconst/Rea
77	7/2k	AA019	Polgahawela - Kegalle	KR	1359	1100	120.35	100.00	5.40	5.60	7.40	9.80	Stl.Trs.	Narrow	Widen/Redec
78	5/5k	B199	Karandupone - Rambukana	KG		1220	125.00	125.00	4.50	4.80	7.40	10.00	Stl.Grdr.	Narrow	Widen/Redec
79	43/2k	AA003	Peliyagoda - Puttalam	CH	1918	13700	69.90	70.00	4.92	4.92	7.40	10.40	Stl.Trs.	Narrow	Reconst
80	56/2k	AA003	Peliyagoda - Puttalam(Battala oya)	CH	1898	1980	105.00	112.80	3.95	3.95	7.40	9.80	Stl.Trs.	Weak/Narr	Reconst
81	242/2k	AA005	Peradeniya - Badulla - Chenkaladi	AN		820	20.00	20.00	3.70	3.70	7.40	9.80	Stl.Trs.	Weak/Narr	Reconst
82	242/1k	AA005	Peradeniya - Badulla - Chenkaladi	AN		820	65.00	65.00	3.80	4.00	7.40	9.80	Stl.Trs.	Weak/Narr	Reconst
83	JFB	AA007	Japan - Sri Lanka Friendship, Phase II	CL		18100	228.00		7.40	9.50			Stl.Trs.	Weak	Reconst
84	110/2k	AA001	Colombo - Kandy	KN	1933	15500	69.00	80.00	5.50	8.30	7.40	12.00	Stl under Tr	Narrow	Reconst
85	91/2k	AA091	Colombo - Kandy	KG	1894	5500	70	75	6.4	7.5	7.40	10	Brick Arch	Narrow/Po	Reconst/App
86	199/3k	AA002	Colombo - Galle - Habantota - Wellawaya	HW		3390	7.4		8.30	10.00			PSC	Settled	Reconst
87	256/1k	AA002	Colombo - Galle - Habantota - Wellawaya	HW		1650	4.90		5.00	5.60			PSC	Narrow	Reconst
88	271/1	AA004	Colombo - Ratnapura - Wellawaya - Battical	AN			78.94		3.84	4.27			Stl.Trs.	Corroded/	Redeck
89	163/9k	AA004	Colombo - Ratnapura - Wellawaya - Battical	RT		940	4.80		4.20	4.50	4.27		Stl.Grdr.	Narrow	Widen/Redec
90	199/2k	AA004	Colombo - Ratnapura - Wellawaya - Battical	BD		250	7.00	7.00	5.50	5.65	7.40	9.80	Stl.Grdr.	Weak/Dang	Reconst
91	169/9k	AA004	Colombo - Ratnapura - Wellawaya - Battical	RT		940	13.80	13.80	6.80	7.10	7.10	9.80	RCC	Settled	Reconst
92	427/1k	AA004	Colombo - Ratnapura - Wellawaya - Battical	BT			289.00		4.60	5.60			Stl.Trs.	Dangd/Trs	Repair
93	21/4k	AA005	Peradeniya - Badulla - Chenkaladi	KN	1926	1600	93.70	100.00	4.9	4.90	7.40	12.00	Stl.Trs/cut	Narrow	Reconst
94	283/2k	AA005	Peradeniya - Badulla - Chenkaladi	BT			27.40		4.70	5.60			RCC	Dangd/RCC	Repair
95	3/2k	AA006	Ambepussa - Kurunegala - Trincomalee	KG		4920	11.5	12	5.5		7.4	10	Stl.Grdr.	Narrow	Widen/Redec
96	8/1 k	AA006	Ambepussa - Kurunegala - Trincomalee	KR		4920	97.80	99.00	5.50	7.10	7.40	12.00	Stl.Trs.	Narrow	Reconst
97	58/2k	AA003	Panadura - Nambapana - Ratnapura	RT	1900	1350	8.80	8.60	4.55	4.55	7.40	9.80	Stl.Grdr.	Narrow	Widen/Redec
98	59/2k	AA008	Panadura - Nambapana - Ratnapura	RT	1940	1350	8.90	8.00	3.60	3.80	7.40	9.80	Stl.Grdr.	Narrow	Reconst
99	5/1k	AA009	Kandy - Jaffna	KN	1360	5950	137.40	140.00	6.70	9.70	7.40	12.00	Stl.Trs/out	Narrow	Reconst
100	161/2	AA009	Kandy - Jaffna	JF		1130	6.10		6.10	10.30			RCC	Dangd	Reconst
101	200/1	AA009	Kandy - Jaffna	JF			17.00		11.50	12.50			Kasnry	Dangd	Reconst
102	25/2k	AA010	Katugastota - Kurunegala - Puttalam	KR			17.20	17.00	5.20	5.80	7.40	9.80	Stl.Grdr.	Weak/Narr	Widen/Redec
103	16/1k	AA012	Puttalam-Trincomalee	CH		1270	5.33		7.90	8.80			RCC	Weak	Redeck
104	1/1	AA015	Batticaloa - Thirukkondaiyadadu - Trincom	BT			14.60		9.20	12.20			RSJ/RCSlab	Narrow	Widen/Recon
105	25/2k	AA015	Batticaloa - Thirukkondaiyadadu - Trincom	BT			8.50		6.80	7.50			RSJ	Narrow	Reconst

SER NO	PR. NO	ROUTE NO	NAME OF ROAD	CE REG/DIST	YEAR OF CONST.	ADT (vpd)	LENGTH(m)		EXISTING WIDTH		PROPOSED WIDTH		TYPE OF BRIDGE	EXISTING DEFECT/S	PROPOSED TREATMENT
							EXST	PROP	CARR.	OVRL	CARR.	OVRL			
106	69/1ka	AA026	Kandy - Mahiyangana - Padiyatalawa	KN		1140	15.60	15.60	3.50	4.30	7.40	9.40	RSJ/RCS	Narrow	Widen
107	30/2	AA032	Nasathkuli - Karaitivu - Mannar (Poonakary)	JF			5.00		3.00	3.50			RCC	Corroded/	Redeck
108	16/7	AA033	Ja Ela - Ekala - Gampaha - Yakkala	GH		4750	5.90		3.31	3.81	6.80	6.80	Stl.Grdr.	Corroded/	Widen/Redec
109	1/2	AA035	Paranthan - Karachchi - Mullativu	JF			4.25		3.60	9.75			Stl.Grdr.	Dangd	Reconst
110	4/2	AA035	Paranthan - Karachchi - Mullativu	JF			10.00		3.00	4.00			Stl.Grdr.	Dangd	Reconst
111	5/6	AA035	Paranthan - Karachchi - Mullativu	JF			10.00		3.00	4.20			Stl.Grdr.	Dangd	Reconst
112	1/1	AA035	Paranthan - Karachchi - Mullativu	JF			14.60		3.60	9.75			Stl.Grdr.	Dangd	Reconst
113	32/1	AB001	Ampara - Inginiyagala	AM			8.7		5.00	5.75			Stl.Trs.	Dangd/Abn	Reconst
114	33/5	AB001	Ampara - Inginiyagala	AM			20.00		6.00	6.00			Bailey	-	Reconst
115	1/1	AB019	Jaffna - Ponnai - Kayts	JF			13.70		3.65	5.50			Timber	Dangd	Reconst
116	13/1	AB021	Jaffna - Poonalai - Point Pedro	JF			245.00		4.50	7.50			Masonry Arch	Dangd	Reconst
117	17/4	AB021	Jaffna - Poonalai - Point Pedro	JF									Masonry Arch	Dangd	Reconst
118	3/2	AB021	Jaffna - Poonalai - Point Pedro	JF			7.50		7.50	8.25			Masonry Arch	Dangd/dec	Redeck
119	2/4	AB026	Natala - Uduphilla	ML		1000	9.10	10.00	6.50	7.00	6.80	9.20	Stl.Grdr.	Weak	Reconst
120	12/2	AB029	Pasyala - Giriulla	GH		1740	6.20		4.40	4.40	7.40		Stl.Grdr.	Corroded/	Widen/Redec
121	2/2	B033	Avaraagal - Thondamanaru	JF			5.00		5.00	5.80			Masonry/Arch	Dangd	Reconst
122	19/1km	B045	Bangadeniya - Andigama - Anawaduwa	CH			18.50		3.45	4.40			Stl.Grdr.	Weak/Harr	Reconst
123	23/2ka	B079	Chilaw - Variyapola	XR		1200	12.00	12.00	3.65	4.25	7.40	11.00	Stl.Grdr.	Narrow	Widen/Redec
124	22/7	B084	Colombo - Horana	KL		4200	6.00	6.00	4.50	4.80	7.40	11.00	Stl.Grdr.	Narrow	Widen/Redec
125	17/10	B084	Colombo - Horana	CL		4200	4.40	4.00	5.70		7.40	11.00	Stl.Grdr.	Narrow	Widen/Redec
126	21/5	B084	Colombo - Horana	KL		4200	7.00	7.00	4.50	4.50	7.40	11.00	Stl.Grdr.	Weak/Harr	Reconst
127	13/2	B093	Dehiowita - Deraniyagala - Woori	XG		700	11.00	11.00	4.30	4.30	6.80	9.20	RSJ/TM	Narrow	Widen/Redec
128	15/4km	B097	Demodara - Spring Valley - Badulla	BN		120	15.30	15.30	3.00	3.50	7.40	9.80	Stl.Grdr.	Weak/Harr	Reconst
129	2/7	B127	Galiganuwa - Ruwanwella	XG		750	3.25	4.30	4.45	5.25	6.80	9.20	Masonry Arch	Weak	Reconst
130	7/1ka	B127	Galiganuwa - Ruwanwella	XG	1917	800	25.00	26.00	4.25	5.35	7.40	9.80	Stl.Trs.	Weak/Harr	Reconst
131	1/2	B127	Galiganuwa - Ruwanwella	XG		1600	6.00	7.00	4.30	4.30	7.40	9.80	Stl.Grdr.	Weak/Harr	Reconst
132	18/4	B129	Galle - Udugama	CL		1200	7.00	7.00	3.50	3.70	6.80	9.20	Stl.Grdr.	Narrow/Da	Reconst
133	5/2	B188	Kaluwagala - Labugama	CL		500	9.00	9.00	4.00		6.80	9.20	Stl.Grdr.	Narrow	Widen/Redec
134	4/4	B230	Koluvil - Vaddukottadai	JF			12.00		4.00	5.00			Masonry Arch	Dangd	Reconst
135	5/9ka	B249	Lady Macalun Drive	NW		320	10.00		4.60	4.75	6.80	9.20	Stl.Grdr.	Weak/Harr	Reconst
136	9/4	B272	Naravala - Wobeddewa	XR		1270	31.30	38.00	4.20	4.35	7.40	9.80	Stl.Grdr.	Weak/Harr	Reconst
137	2/1	B276	Nathagal - Pandatharippu - Sambillithurai	JF			11.50		4.60	5.50			Masonry Arch	Dangd/Arc	Reconst
138	16/5	B304	Nagoda - Kalawellawa - Bellapitiya	XL		2000	12.00	12.00	4.60	4.80	6.80	9.20	Stl.Grdr.	Weak	Reconst
139	25/1km	B312	Nuala - Elahera - Kaluganga	PL	1938	350	77.60	97.40	3.00	3.50	6.80	9.2	Causeway	Narrow/su	Reconst
140	23/3km	B332	Nuwara Eliya - Udapossellawa	NW		400	14.02		2.97	3.83	6.80	9.2	Stl.Grdr.	Narrow/we	Reconst
141	1/1ka	B344	Paddiruppu - Vellavelly	BT			144.50		6.00	9.60			Bailey	-	Reconst
142	30/2km	B363	Pelawatta - Kankotayawatta - Tinniyawela	GL			25.6	30.00	2.85	2.85	6.80	9.2	Stl.Grdr/Tia	Submersib	Reconst
143	3/3	B374	Potuvil - Panawa (Arugambe Bridge)	AM			154.50		6.73	7.77			Stl.Trs.	Corroded/	Redeck
144	1/1	B379	Puttalam - Marichchiesde	CH			10.00		6.50	7.50			Stl.Grdr.	Weak/Harr	Widen/Recon
145	21/3	B409	Talgodapitiya - Yatawatta - Oombawela	ML		950	13.80	14.00	4.25	4.25	6.80	9.20	Stl.Trs.	Narrow	Widen/Redec
146	16/7ka	B412	Tavalanteana - Talawatele	NW		200	5.30	9.83	2.70	3.90	7.40	9.80	Stl.Grdr.	Weak/Harr	Reconst
147	31/2	B419	Thoppu - Madampe	CH		2010	10.90		4.40	4.80			Stl.Grdr.	Weak/Harr	Reconst
148	42/2	B419	Thoppu - Madampe	CH		2010	11.00		3.85	4.04			Stl.Grdr.	Weak/Harr	Reconst
149	50/2km	B421	Tiruwanaetiya - Agalawatta	KL		830	7.00	7.00	3.6	4.50	6.80	9.20	RCC	Narrow	Widen/Redec
150	4/5ka	B444	Veyangoda - Kaleliya	GH			7.90		4.35	4.50	6.80		RSJ	Corroded/	Widen/Redec
151	9/3	B445	Veyangoda - Ruwanwella	GH		3225	10.20		4.60	4.60	6.80		Stl.Grdr.	Corroded/	Widen/Redec
152	19/6	B445	Veyangoda - Ruwanwella	XG		400	7.00	7.00	5.00	7.10	7.40	9.80	Stl.Grdr.	Narrow	Reconst
153	18/3	B445	Veyangoda - Ruwanwella	XG		400	19.00	20.00	3.42	3.42	7.40	9.80	Stl.Grdr.	Narrow	Widen/Redec
154	9/4	B445	Veyangoda - Ruwanwella	GH		3225	10.50		4.60	4.60	6.80		Stl.Grdr.	Corroded/	Widen/Redec
155	15/10	B461	Wattegama - Kandenuwara - Variyapola	ML		50	12.20	12.20	4.30	4.90	7.40	9.80	Brick arch	Weak	Reconst
156	29/3	B461	Wattegama - Kandenuwara - Variyapola	ML		50	6.00	7.00	3.70	3.90	6.80	9.20	Stl.Grdr.	Narrow	Widen/Redec
157	28/2km	B461	Wattegama - Kandenuwara - Variyapola	ML		50	26.95		3.05	3.25			Stl.Grdr.	Weak	Reconst

SER NO	BR. NO.	ROUTE NO	NAME OF ROAD	CE REG/DIST	YEAR OF CONST.	ADT (vpd)	LENGTH(m)		EXISTING WIDTH		PROPOSED WIDT		TYPE OF BRIDGE	EXISTING DEFECT/S	PROPOSED TREATMENT
							EXST	PROP	CARR.	OVRL	CARR.	OVRL			
158	3/2	B473	Vennappuva - Kirisetiyaana	CH		17.37		3.96	5.34			Stl.Grdr.	Weak/Harr	Reconst	
159	268/1	AA004	Colombo - Ratnapura - Wellawaya - Battical	BT	640	290.00		4.70	8.00			Stl.Trs.	Weak	Reconst	
160	115/5	AA009	Kandy - Jaffna	VV	1150	19.20	20.00	4.4	6.40	7.40	9.80	Stl.Grdr.	Badly Dam	Reconst	
161	50/4	AA011	Maradanadawela - Habarana - Tiriktondiadi	PL	1500	290.00	300.00	4.70	6.00	7.40	9.80	Rail cum Stl	Narrow	Reconst	
162	147/3	AA014	Medawachchiya - Mannar - Talaiannar	VV	950	122.00	130.00	4.20		7.40	9.80	Stl.Trs.	Weak/Harr	Reconst	
163	114/3	AA014	Medawachchiya - Mannar - Talaiannar	VV		31.00	31.00	4.57	4.72	6.80	9.20	Stl.Grdr.	Badly Dam	Reconst	
164	14/2km	AA027	Ampara - Uhana - Maha Oya	AN		45.00	47.30	6.75	6.75	7.40	9.80	RCC	Weak	Reconst	
165	17/3	AA029	Varuniya - Horowpathana	AN		10.70	11.00	3.00	4.30	6.80	9.20		Narrow/Da	Reconst	
165	1/7	AA029	Varuniya - Horowpathana	VV		5.00	5.00	4.26	4.86	6.80	9.20		Dangd	Reconst	
167	25/2	AA032	Navathuli - Karatiyu - Mannar	VV		17.00	18.00	3.38	6.00	6.80	9.20		Weak	Reconst	
168	2/4	AA034	Mankulam - Wallaitiyu	MY		31.00	32.00	3.80	4.00	6.80	9.20	Timber	Weak	Reconst	
169	6/1	AA035	Paranthan - Karachchi - Kullatiyu	JF		40.00	45.00	2.70	3.00	7.40	9.80	Stl.Grdr.	Weak/Harr	Reconst	
170	27/1	AB021	Jaffna - Poonalai - Point Pedro	JF		114.50		5.50	6.50			Wsnry Arch	Dangd	Reconst	
171	3/1	B350	Pailenoya - Inginiyagala	AM	250	26.00	27.00	6.00		6.80	9.20	Stl.Grdr.	Narrow	Widen/Redec	
172	13/1	B424	Trinconalee - Puludai	TR		290.00	290.00	3.50	4.40	6.80	9.20	RCCBeam	Narrow/Da	Reconst	
173	17/1	B304	Magoda Kalavellawa Bellaspitiya	KL	2000	6.3		4.9				Stl.Grdr.	Corroded/Grdr	Reconst	
174	86/1km	AA006	Ampussa-Kurunegala-Trinconalee	ML	2780	10.4	16.21	6.1	7.35	7.4	9.8	RCSlab	Poor align	Reconst	
175	1/2 !		Old Galle Road Panadura	KL		4.32			8			Stl.Grdr.	Corroded/Grdr	Reconst	
176	98/1km	AA002	Colombo-Galle-Rambantota-Wellawaya	GL	4620	57.7		5.49	5.79			RCC/RCS		Repairs	
178	192/2km	AA004	Colombo-Ratnapura-Wellawaya-Batticaloa	BD	270	44.4	48.00	4.65	4.65	7.40	9.80	SG	Narrow	Widen/Redeck	
179	38/1km	AA017	Galle-Deniyaya-Wadampe	WR	1250	16.76		4.62	4.62			SG	Weak/Narrow	Reconst	
181	1/1	B027	Apr. Roads to Railway Station, Ratnapura	RT		7.31		9.52	13.28			SG			
181	11/5km	B312	Naula - Elahera - Kaluganga	ML		18.89		3.50	4.11			RCS	Narrow	Widen/Redec	
182	1/2km	B444	Veyangoda - Kaleliya	GH		12.49		3.04	3.96			RSJ/T. deck	Narrow	Reconst	
183	361/1c	AA004	Colombo - Ratnapura - Wellawaya - Batticaloa	AM	960										
183	34/1	B247	Kurunegala - Maranala-Wadampe	KR	1280	36.68		4.26	4.26			Stl.Grdr.		Reconst	
183	2/5	B453	Walpoila - Maifawalana	GH		18.28		3.35	3.65			RCC	Narrow	Widen/Redeck	
186	16/4	B374	Potuvil - Panama (vented causeway)	AN								Causeway		Reconst	
187	19/3km	B346	Palapathwela - Galewela	ML	300	10.38		3.50	3.65			Stl.Grdr.			
187	3/4	B472	Teliveriya - Kiridiwela	GH		10.66		3.65	4.57			Stl.Trs.			
189	249/1km	AA005	Peradeniya - Badulla - Chenkaladi	AM		21.35						Bailey	Weak	Reconst	
189	33/3	B247	Kurunegala - Maranala-Wadampe	KR	1280	10.05		5.48	10.66			RCC/Bailey	Dangd	Reconst	
191	24/23km	B156	Riniduna-Opatha-Pitabeddara	GL	230	8.60		4.10	3.50			RCS	Weak	Reconst	
191	3/2	B272	Karavilla - Udubeddawa	CH	1270	3.10		6.09	9.45			Stl.Grdr.	Weak	Reconst	
193	5/2	B379	Puttalam - Marichchikade	CH		10.66		5.48	6.32			Psc	Flood damaged	Reconst	
194	13/1	B019	Ananaduwa-Uswewa-Galgamuwa	CH	460							Causeway			
195	10/2km	B288	Minuwangoda-Gampaha-Miriswatta	GH	6660	5.30		5.50	5.50			RSJ	Narrow/b. ali	Reconst	
195	13/3	B312	Naula - Elahera - Kaluganga	PL	350	12.20		4.12	4.10			RSJ/RCS		Reconst	
197	10/3km	B288	Minuwangoda-Gampaha-Miriswatta	GH	6660	52.80		5.60	6.70			Stl.Grdr.	Narrow/b. ali	Reconst	
198	21/4	B409	Talgodapitiya - Yatawatta - Oombavela	ML	950									Reconst	
199	24/7km	B156	Riniduna-Opatha-Pitabeddara	GL	230	6.00		2.70	2.70			RSJ/TM	Weak	Reconst	
200	6/5	B478	Wilakatuoptha-Ganewalths-Kubukgete	KR		78.32		3.96	5.02			Stl.Grdr.			
201	10/5km	B288	Minuwangoda-Gampaha-Miriswatta	GH	6660	7.2		8.00	7.00			Con.ArchiRCS	B.Align	Reconst	
202	14/5 km	B304	Magoda-Kalavellawa-Bellaspitiya	KL		3.9		5.7				Bailey	Damaged	Reconst	
203	71/3 km	AA006	Ampussa-Kurunegala-Trinconalee	ML		5.8		6.5				RCS	Appt. Damaged	Repair	



## TYPE OF BRIDGE

RCS -- REINFORCE CONCRETE SLAB  
RCB -- REINFORCE CONCRETE BEAM  
PSC--PRI-- PRESTRESS PRETENSION BEAM  
PSC--PO-- PRESRESS POSTENTION BEAM  
ARCH/BR-- BRICK ARCH BRIDGE  
ARCH/ST-- STONE ARCH BRIDGE  
ARCH/CC-- CONCRETE ARCH BRIDGE  
STONE -- STONE BRIDGE  
TIMBER -- TIMBER BRIDGE  
ST.TR/T -- STEEL THROUGH TRUSSES  
ST.TR/D -- STEEL DECK TRUSSES  
RSJ/RCS --R/C SLAB OVER STEEL GIRDER  
RST/BUC--BUCKLE PLATE OVER STEEL GIRDER  
RSJ/COR--CORRUGATED PLATE OVER STEEL GIRDER  
RSJ/T --TIMBER DECK OVER RSJ  
Stl.Grd (SG) = Steel Girder  
Stl.Trs =Steel Truss  
RCC =Reinforce concrete

## Chief Engineer Regions

CL -- COLOMBO	HM -- HAMBANTOTA
GH -- GHAMPAGA	AN -- ANURADHAPURA
KL -- KALUTARA	PL -- POLONNARUWA
GL -- GALLE	KR -- KURUNEGALA
MR -- MATARA	CH -- CHILAW
MN -- MONARAGALA	BT -- BATTICALOA
BN -- BANDARAWELA	AM -- AMPARA
JF -- JAFFNA	TR -- TRINCOMALEE
VV -- VAVUNIYA	KN -- Kandy
MV -- MULATIVU	NW -- Nuwara Eliya
BD -- BADULLA	
PT -- RATNAPURA	
KG -- KEGALLE	
ML -- MATALE	



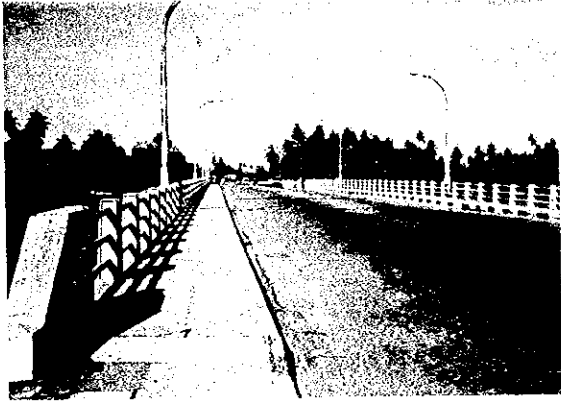
## 8 現地踏査写真集



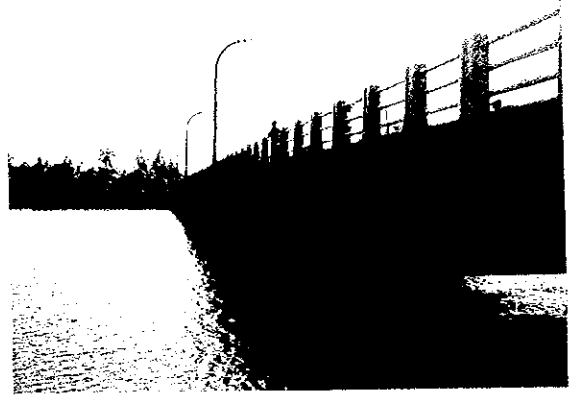
事前調査において現地踏査を行った橋梁

番号	RDA	橋梁番号	国道番号	橋名	形式	架橋年	所見・特記事項	写真番号
1			A2	Panadura	PCT桁橋			1, 2
2			A2	Karutara	PCT桁橋			3, 4
3	75	62/1	A2	Bentota(1)	下路式鋼トラス橋			5, 6, 7
4	76	62/2	A2	Bentota(2)	下路式鋼トラス橋			8, 9, 10
5	31	3/3	B114		PCT桁橋		スリランカ標準タイプのPCT桁橋	11, 12
6	29	72/3	A2		鋼版桁橋	1929		13, 14
7	28	81/1	A2		下路式鋼トラス橋	1932		15, 16
8	27	87/1	A2		石造りアーチ橋	1898	オランダ時代の建設という	17, 18
9	59	43/4	B157	Munamalwatta	鋼版桁橋	1924		19, 20, 21
10	19	6/10	B207	Eriyangala	下路式鋼トラス橋	1890		22, 23
11	33	12/3	B199	Angurwatota	下路式鋼トラス橋	1943	10トンの荷重制限を行っている。	24, 25, 26, 27, 28
12	95	3/2	A6		鋼版桁橋			29, 30
13	96	8/1	A6	Alawwa	下路式鋼トラス橋	1934		31, 32, 33, 34
14	77	3/2	A19		下路式鋼トラス橋	1869		35, 36
15	78	5/5	B199		鋼版桁橋		野生のイグアナが生息	37, 38, 39, 40
16	85	91/2	A1		レンガ造りアーチ橋	1894		41, 42
17	84	110/2	A1	Peradeniya	上落式鋼アーチ橋	1933		43, 44
18	99	5/2	A9	Katugastota	下路式鋼トラス橋	1860		45, 46, 47, 48, 49
19	174	86/1	A6		RC床版橋			50
20	7	20/4	B425	Pitipana	PCT桁橋			51, 52, 53, 54, 55, 56
21	79	43/2	A3		下路式鋼トラス橋	1918		57, 58, 59, 60
22	23	5/3	B435		下路式鋼トラス橋	1898		61, 62, 63, 64





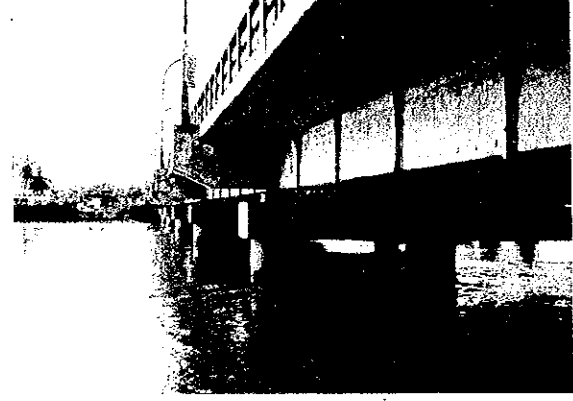
①PANADURA Br



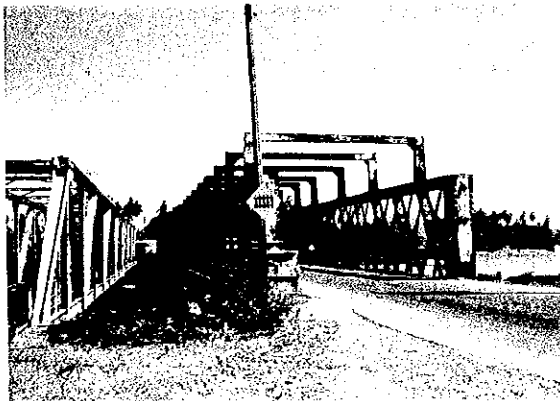
②



③KALUTARA Br



④



⑤Bentota Br (1)

(75 62/1)



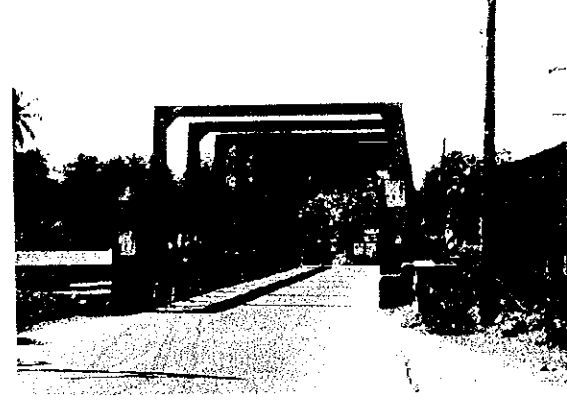
⑥

(75 62/1)



⑦

(75 62/1)

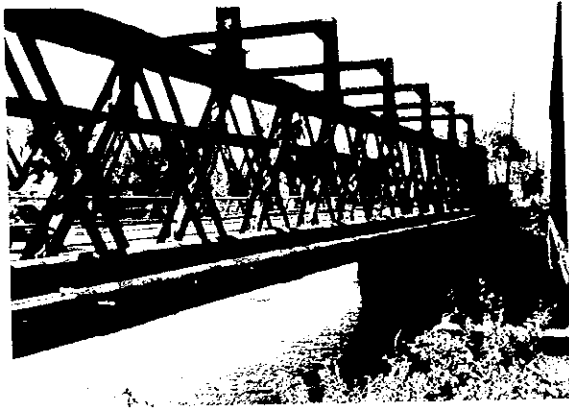


⑧Bentota Br (2)

(76 62/2)







⑨

(76 62/2)



⑩1902年架設

(76 62/2)



⑪RDA架設の標準タイプ橋梁2車線で両側歩道を有す

(31 3/3)



⑫同左、橋下(PCT桁橋)

(31 3/3)



⑬

(29 72/3)



⑭主桁のウェブ・下ブランジが腐食している。

(29 72/3)



⑮Belapitiya Br

(28 81/1)



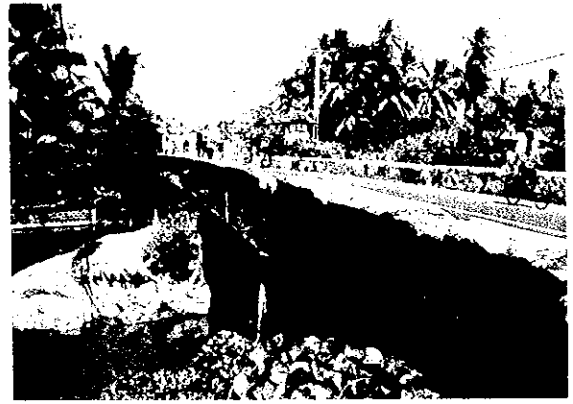
⑯桁下高さが低いため、主構が水中に浸かる

(28 81/1)





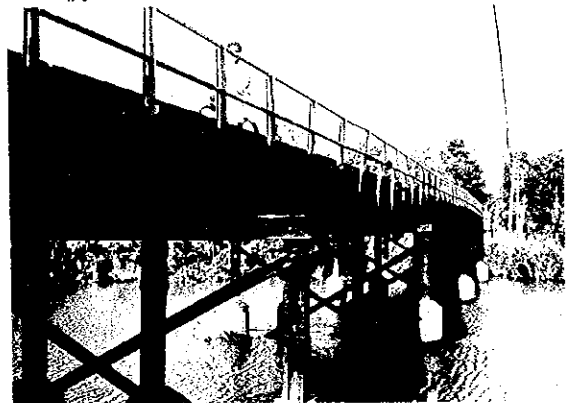
①⑦橋梁部で路肩がなく、幅負が狭い



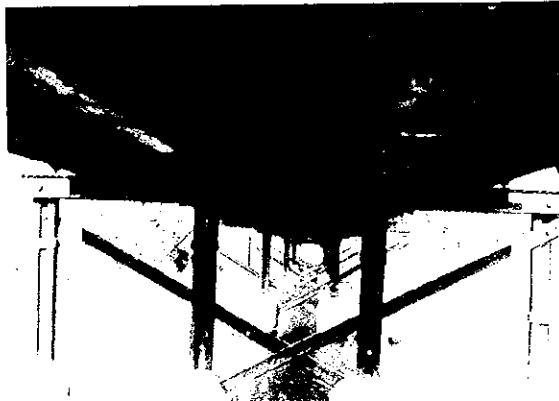
①⑧オランダ時代に架設されたという石造りアーチ橋



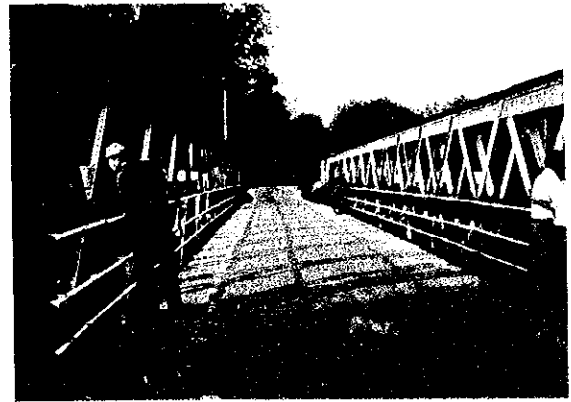
①⑨B級道路の幅負の狭い橋半、交通費は少ない。  
Munamalwatta Br. (59 43/4)



②⑩下部工が貧弱であり、設計荷量に耐えられるか疑問がある。(59 43/4)



②⑪床版は桁間にプレートを渡し、コンクリートを打設してある。(59 43/4)



②⑫Eri yangala Br (19 6/10)



②⑬ (19 6/10)

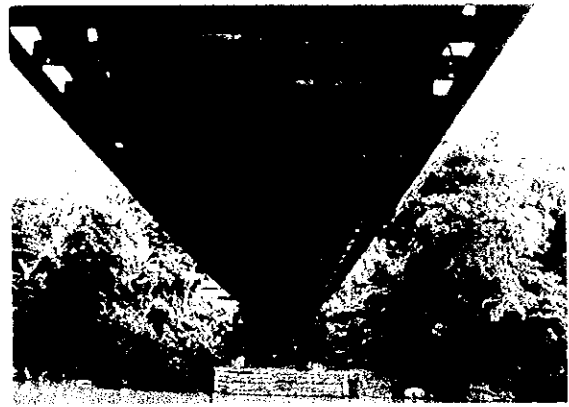


②⑭制限荷重10TONの1943年架設のトラス橋 Angurwatota Br (33 12/3)





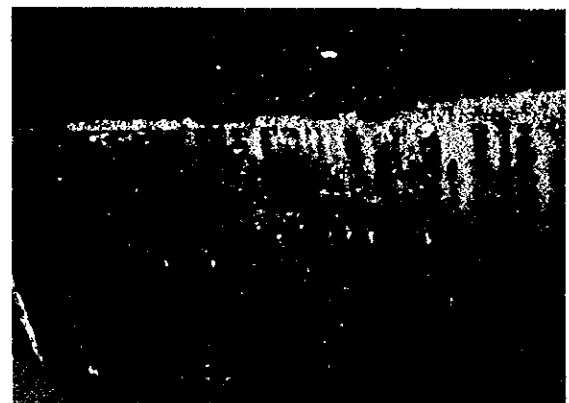
㉔主構に補強した形跡があるが主構が中央でたわんでいる。(33 12/3)



㉕床組部材も取り替えた形跡がある。(33 12/3)



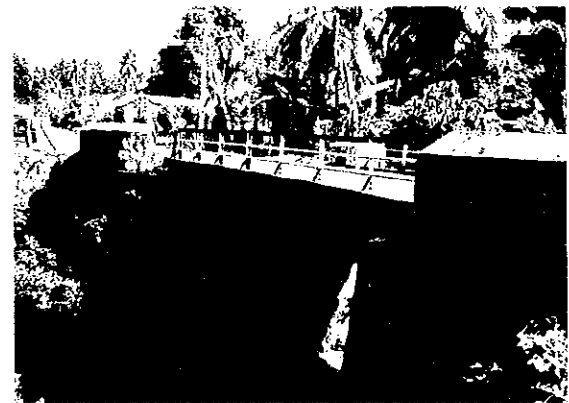
㉖側径間の桁橋 (33 12/3)



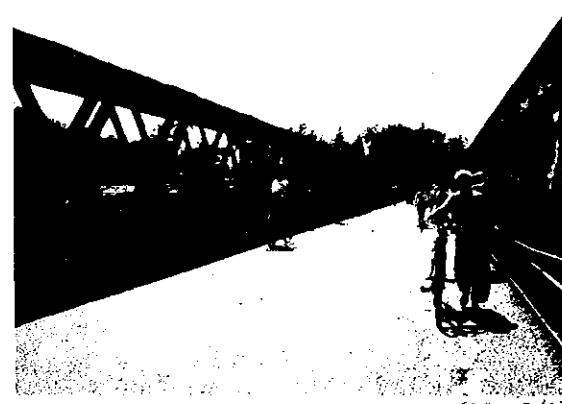
㉗橋脚に該られた橋銘板。1943年の字が見える (33 12/3)



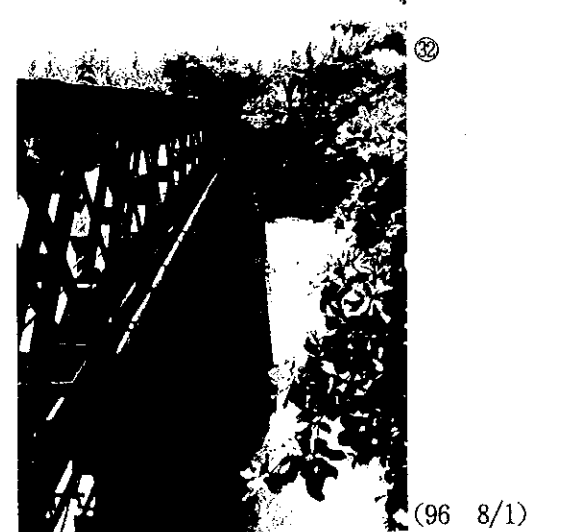
㉘ (95 3/2)



㉙ 95 (3/2)

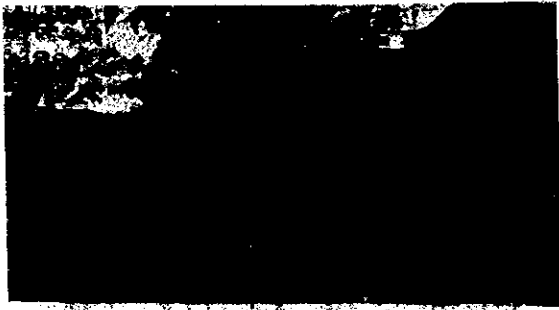


㉚Alawwa Br (96 8/1)



㉛ (96 8/1)





10-11 වසර - ආරම්භක සම්මන්ත්‍ර

33

(96- 8/1)



34 路面舗装はR Cの上にブロック敷設し表層(アスコン)を舗設してある。(96.9)



35

(77 3/2)



36

(77 3/2)



37

(38 5/2)

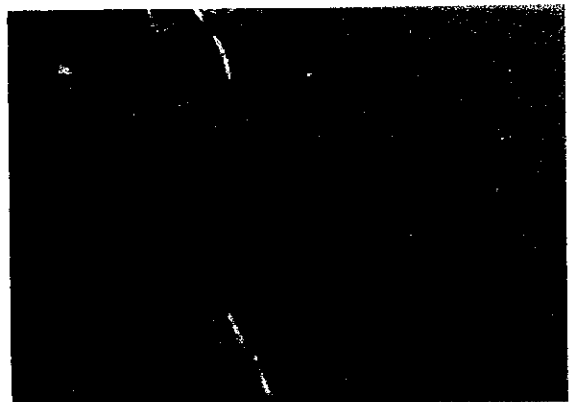


38 石造りの下部工、安定感がある。(38 5/2)



39

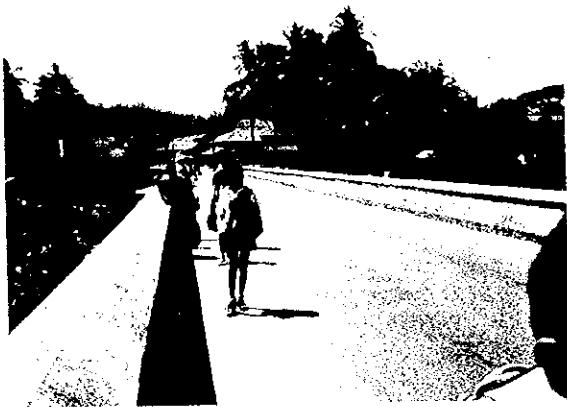
(38 5/2)



40 野生のイグアナが生息している。(38 5/2)







④①

(85 91/2)



④②

(85 91/2)



④③Penademiya Br歩車分離、2車線の幅員  
(84 110/2)



④④主構の維持管理も良好で、下部工は強固な造りである。  
(84 110/2)



④⑤Katugastota Br

(99 5/2)



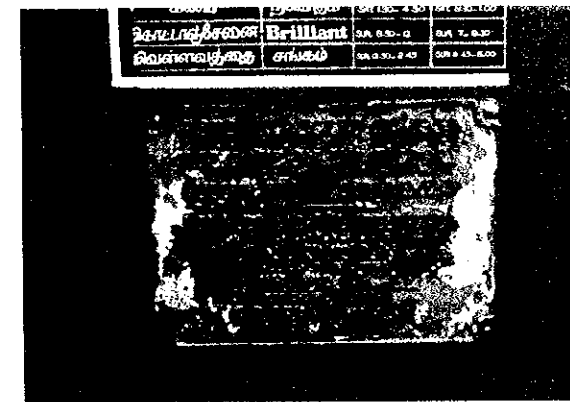
④⑥下部工は強固な造り

(99 5/2)



④⑦

(99 5/2)



④⑧

(99 5/2)

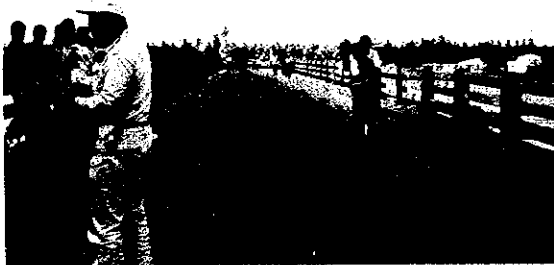




④⑨橋側歩道の床版（プレキャスト版）を取りはずし、部材の補修を行なっている。（995/2）



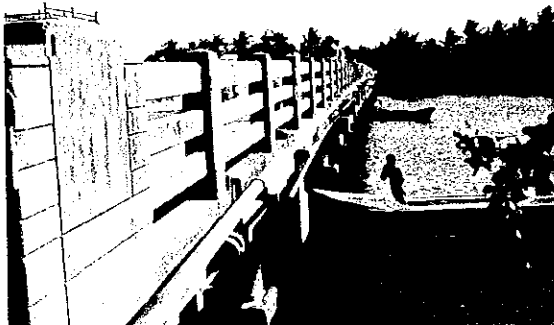
⑤⑩コンクリート橋（RC床版橋か、BOXか不明）  
（174 86/1）



⑤⑪幅員にて車線あるが大型車の通行規制あり  
Pitipana Br  
（7 20/4）



⑤⑫側面から見ても橋下面の変状はわからない  
（7 20/4）



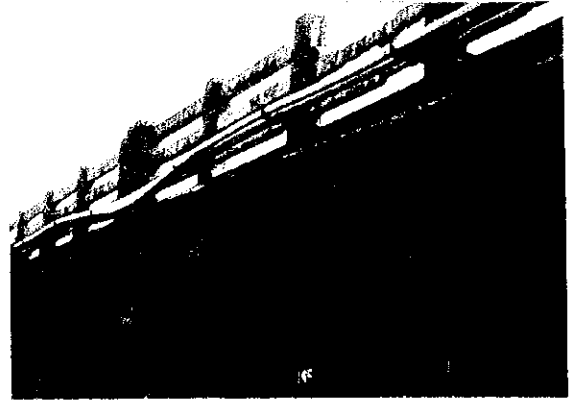
⑤⑬桁下高が低く、大型船の通過ができない  
（7 20/4）



⑤⑭下部工（橋脚）に入った亀裂（幅w=2.0cm）  
（7 20/4）



⑤⑮プレキャストT桁の腐食、横つなぎ材（鉄筋）も腐食している。  
（7 20/4）



⑤⑯  
（7 20/4）





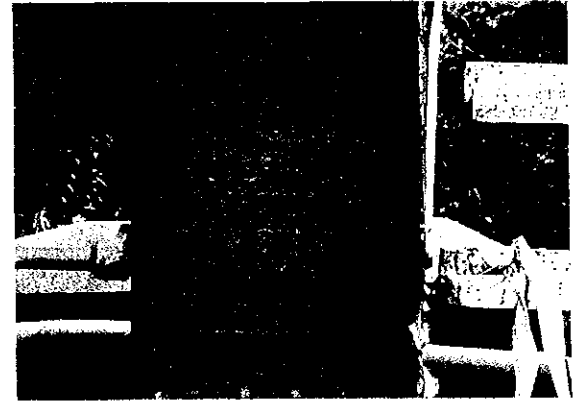
⑦幅量は狭いが大型車のすれちがいは可能  
(79 43/2)



⑧ (79 43/2)



⑨橋下面も比較的良好に維持管理が行われている様子  
(79 43/2)



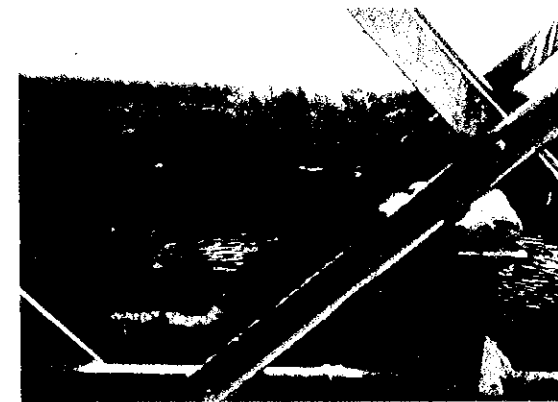
⑩1918年の銘板  
(79 43/2)



⑪市街地にある2車線橋架、交通量は多い  
(23 5/3)



⑫塗装などの維持管理は行われていない。  
(23 5/3)

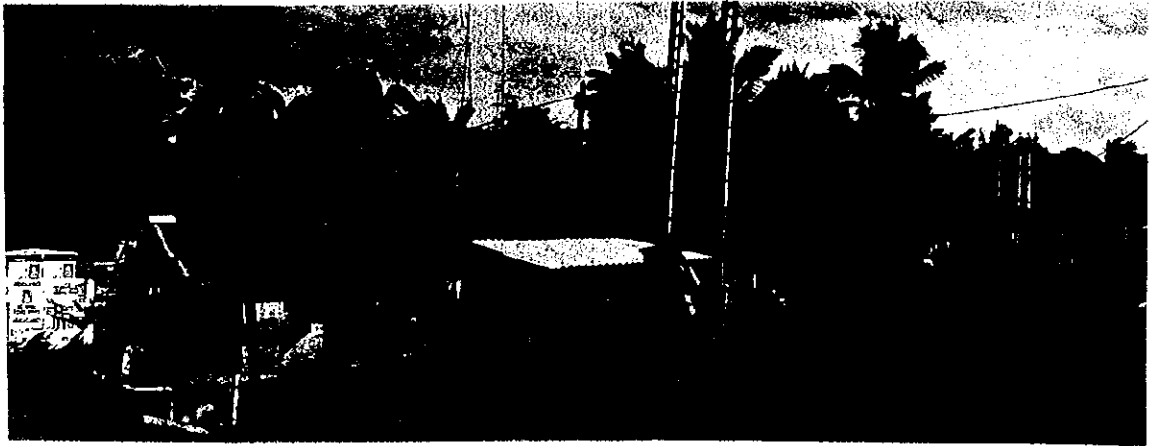


⑬トラスの斜材が腐食し断面欠損している。  
(23 5/3)



⑭スプライスのリベット頭部が腐食している。  
(23 5/3)





⑤橋詰付近の民家（洗濯屋）。左端が橋の親柱の縁端部。



⑥橋のたもとの果物の出店



⑦橋のたもとの民家



⑧橋のたもとから続く民家、部落。



⑨橋付近の住宅







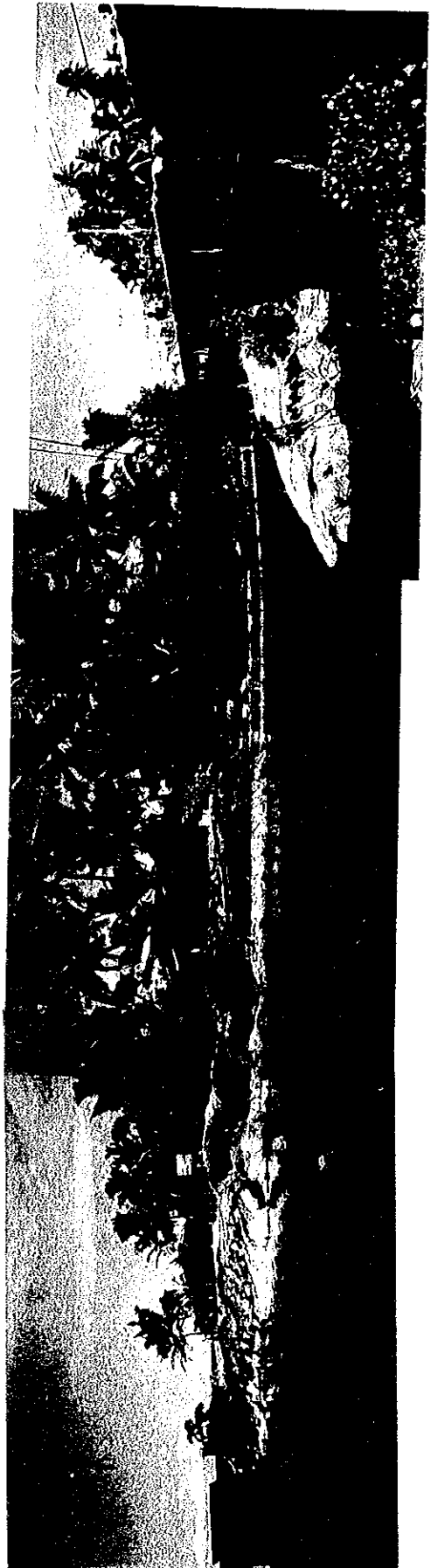
⑩橋台付近の民家の井戸



⑫橋のすぐ下流の水門。向う側がインド洋

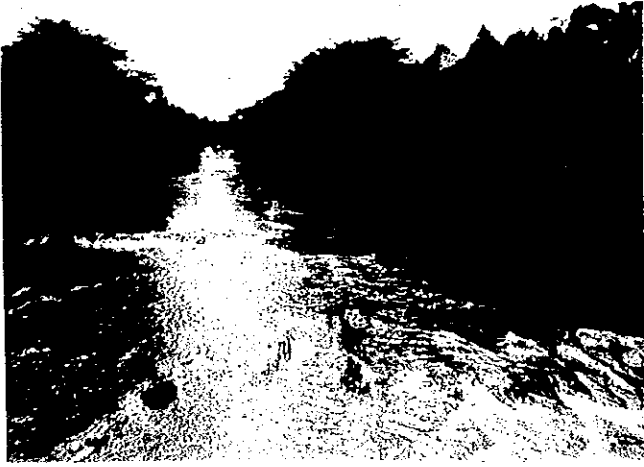


⑬石橋とその高欄。川中は自然岩か？



⑭オランダによって建設されたといわれる石橋（アーチ）と下流側周辺のパノラマ風景。

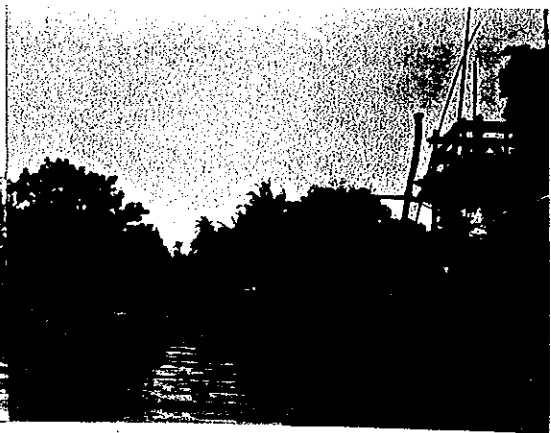




⑭川での水浴びか魚捕りか？



⑮川砂の採取をする人達



⑯桁下のクリアランスの関係により上流側はボートなどの小型船のみ

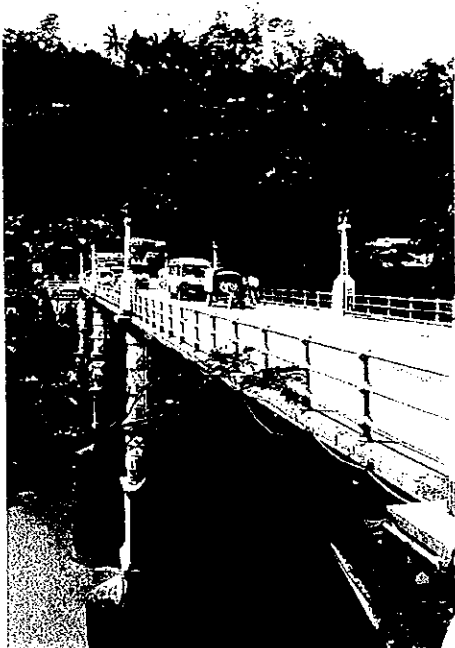


⑰橋の下流側の船群



⑱偶然に見かけた2メートル近くはあろうと思われる巨大なイグアナ。橋脚付近の草地にたどりつき休憩中





⑩イギリス時代の優雅な、格式を感じさせる橋梁



⑫親柱付近の侵食による危険な穴



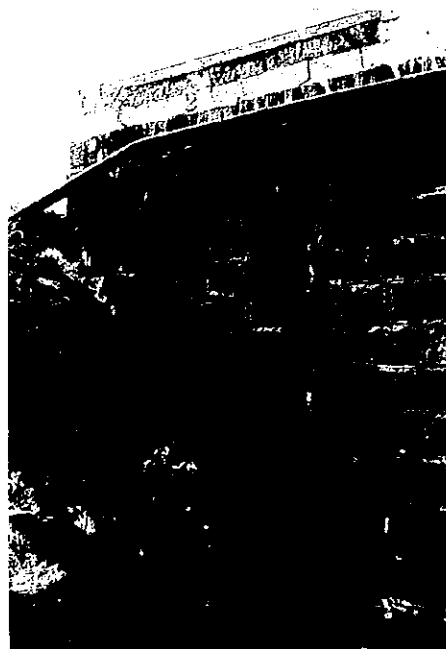
⑪重量制限と幅員狭少、たるみの見られる橋、架替時に設計配慮の必要性？



⑬ウィングが無く、橋台まわりが崩壊している状況

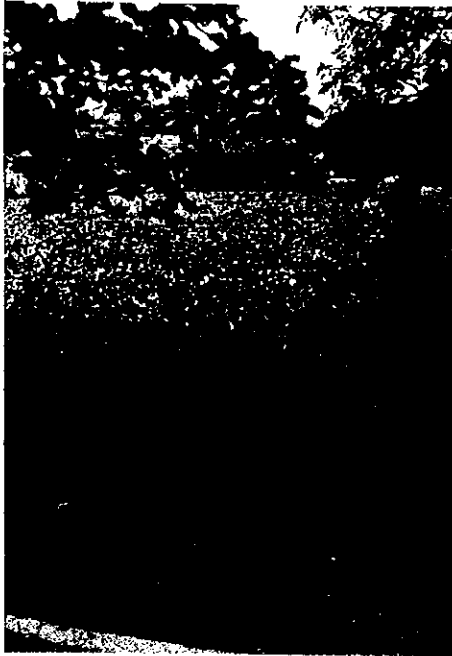


⑧

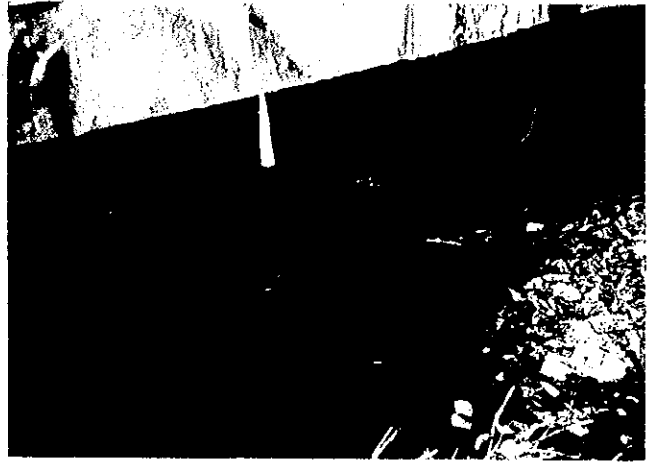


⑭ウィングの石積に生じているクラック群





⑥ 広大なホテイアオイの池か川か？



⑦ 桁下空間に溜まって浮遊するごみ等



⑧ 市街地近くの氾んだ河川に見られるホテイアオイ。富栄養化のしるしか？



⑨ 橋へのアプローチ。すぐに直角に曲がっているため渋滞中。



⑩ アプローチ道路の幅に比べ、急に幅の狭くなっている橋。一方（交互）通行。





## 9 収集資料リスト



## Data List

## 収集資料リスト

資料名		発行機関		発行日	備考
1	ANNUAL REPORT	1	CENTRAL BANK OF SRI LANKA	28 Apr. 1994	
2	Economic Policy Statement of the Government of Sri Lanka	1	Speech script of P.M. Bandaranaike		
3	RDA Organization chart	2	RDA		
4	Public Investment Program (Consolidated Fund)	2	RDA		Copy
5	Information Brochure on the National Highways Sector	2	Ministry of Health Highways & Social Services	14 Nov. 1994	
6	Financial Statement as of Sept 94	2	RDA		
7	Monthly Performance Report of Ministries (RDA)	2	RDA	Jun. 1994	
8	Provincial Organization of the RDA	2	RDA		
9	Programme of Work (Budget) 1995	2	RDA		
10	National Highway rehabilitation plan by Donors	3	RDA		
11	Map of Highway Construction Proiects	3	RDA		
12	Corridor Map on Southern Highway Project	3	RDA		
13	Master Road Rehabilitation List	3	RDA		
14	Road/Bridge rehabilitation Projects (Foreign Aids)	3	RDA		
15	List of Bridges of Urgent Rehabilitation (203 bridges)	3	RDA		
16	Desire Line Diagram for Vehile Entering and leaving Colombo	4	RDA		Blue Print
17	Traffic Flow for southern Highway Study	4	RDA		
18	Average Daily Traffic Volumes on National Highways	4	RDA		
19	Vehile omposition of Traffi on National Highways	5	RDA		
20	Design Office Practices (Standard)	6	RDA		
21	Axle Load Survey Stations	7	RDA		
22	Axle Load Survey Peilyagoda-puttalam Rd 4th Km(93/11/10)	7	RDA		
23	Design of a P.S.C.Beam	8	PSC Beam Factory		
24	Equipment for Bridge Inspetion	9	RDA		
25	"Implications of Traffic Accidents" Daily News	10	Daily News	17 Sep. 1994	









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