

APPENDICES

1. MEMBER LIST OF THE STUDY TEAM
2. STUDY SCHEDULE
3. LIST OF PARTIES CONCERNED IN SRI LANKA
4. MINUTES OF DISCUSSIONS
5. COST ESTIMATION BORNE BY SRI LANKA
6. GEOLOGICAL DATA

Appendix 1. Member List of the Study Team

THE PROJECT FOR
CONSTRUCTION OF A NEW HIGHWAY BRIDGE AT MANAMPITIYA
IN
THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

1-1 For the Study

No.	Name	Job Title	Occupation
1	Mr. Yukihiko EJIRI	Leader	Chief Inspector, Inspection Division, Grant Aid Management Department, JICA
2	Mr. Keigo KONNO	Chief consultant/ Bridge planner	Oriental Consultants Co., Ltd.
3	Mr. Motohiro HASEGAWA	Environmental and social consideration	Nippon Koei Co., Ltd.
4	Mr. Nobuhiro KUBOYA	Bridge designer	Oriental Consultants Co., Ltd.
5	Mr. Yasushi MOMOSE	Natural condition surveyor (Topography/ Geography/ Hydrology)	Nippon Koei Co., Ltd.
6	Mr. Atsushi KAMIYAMA	Construction plan/ Cost estimator	Oriental Consultants Co., Ltd.

1-2 For Explanation of Draft Final Report

No.	Name	Job Title	Occupation
1	Mr. Hideki SAKATA	Leader	Deputy Resident Representative JICA Sri Lanka Office
2	Mr. Keigo KONNO	Chief consultant/ Bridge planner	Oriental Consultants Co., Ltd.
3	Mr. Motohiro HASEGAWA	Environmental and social consideration	Nippon Koei Co., Ltd.
4	Mr. Nobuhiro KUBOYA	Bridge designer	Oriental Consultants Co., Ltd.

Appendix 2. Study Schedule of the Study

2-1 Schedule of the Survey

No	Date	Mr. Ejiri	Mr. Konno	Mr. Hasegawa	Mr. Kuboya	Mr. Momose	Mr. Kamiyama		
1	7.4	Sun	Narita (TG647 : 11:00) Bangkok (15:30/TG307 : 21:45) Colombo (23:59)						
2	5	Mon	Courtesy call to Embassy of Japan (EOJ), JICA Sri Lanka Office (JICA), CEA						
3	6	Tue	Courtesy call to RDA, DWC						
4	7	Wed	Data collection/ Site survey						
5	8	Thu							
6	9	Fri							
7	10	Sat						Narita (SQ997 : 11:30) Singapore (17:25/SQ402 : 22:40)	
8	11	Sun						Colombo (00:15)	
9	12	Mon							
10	13	Tue						Explanation/ Discussion of Inception Report	
11	14	Wed						Ditto	
12	15	Thu						Ditto	
13	16	Fri						Signing of M/D, report to EOJ, JICA	
14	17	Sat	Colombo (SQ401 : 1:35) Singapore (7:30/SQ996:09:05) Narita (16:55)	Data collection/ Site survey					
15	18	Sun							
16	19	Mon							
17	20	Tue							
18	21	Wed							
19	22	Thu							
20	23	Fri							
21	24	Sat							
22	25	Sun							
23	26	Mon							
24	27	Tue							
25	28	Wed	Colombo (TG308 : 1:40) Bangkok (6:05/TG640 : 11:20) Narita (19:30)						
26	29	Thu	Report to RDA	Report to RDA					
27	30	Fri	Report to EOJ, JICA	Report to EOJ, JICA					
28	31	Sat	Data arrangement	Data arrangement					
29	8/1	Sun							
30	2	Mon	Colombo (TG308 : 1:40) Bangkok (6:05/TG640 : 11:20) Narita (19:30)	Colombo (TG308 : 1:40) Bagkok (6:05/TG640 : 11:20) Narita (19:30)					

2-2 Study Schedule of the Explanation of the Draft Final Report

No	Date	Mr. Sakata	Mr. Konno	Mr. Hasegawa	Mr. Kuboya
1	10/24	Sun	Narita (TG647 : 11:00) Bangkok (15:30/TG307 : 21:45) Colombo (23:59)		
2	25	Mon	Courtesy call to EOJ, JICA, MOH, ERD, RDA		
3	26	Tue	Explanation/ discussion of Draft Basic Design Report with RDA, DWC		
4	27	Wed	Ditto		
5	28	Thu	Ditto		
6	29	Fri	Site survey		
7	30	Sat	Data arrangement		
8	31	Sun	Data arrangement		
9	11/1	Mon	Explanation/ discussion of Draft Basic Design Report with RDA		
10	2	Tue	Ditto		
11	3	Wed	Signing of M/D, report to EOJ, JICA		
12	4	Thu	Colombo (TG308 : 1:50) Bangkok (6:10/TG676 : 8:20) Narita (16:00)		

Appendix 3. List of Parties Concerned in Sri Lanka

Ministry of Highways

Mr. S. Amarasekera Secretary

Road Development Authority

Mr. M.M.C. Ferdinando Chairman
Mr. P. Dayananda General Manager
Dr. G.L. Asoka J. de Silva Director, Engineering Services Division
Mr. Weerathonga Director, Planning Division (Predecessor)
Mr. B.V.D.N. Chandrasiri Director, Planning Division (Present)
Mr. Rohita Deputy Director, Engineering Services Division
Mrs. Namalie Siyambalapitiya Civil Engineer
Mr. Isao Ueda JICA Expert to Sri Lanka (Planning Division)

Central Environment Authority

Mrs. Kanthi de Silva Acting Director, Environmental Management & Assessment Division

Department of Wildlife Concervation

Mr. Dayananda Kariyawasam Director General
Mrs. Chandari Wilson Director

Ministry of Finance

Mr. J.H.J. Jayamaha Additional Director General, Department of External resources
Mr. Mpduk Mapa Pathirana Director, Department of External resources

Embassy of Japan

Mr. Akio Suda Ambassador
Mr. Koji Iwashita First Secretary
Mr. Hitoshi Fukuyama Second Secretary

JICA Sri Lanka Office

Mr. Toshio Sugihara Resident Representative (Predecessor)
Mr. Takumi Ueshima Resident Representative (Present)
Mr. Hideki Sakata Deputy Resident Representative
Mr. Jitsuya Ishiguro Assistant Resident Representative
Mr. Ko Goto Assistant Resident Representative

**Minutes of Discussions
on the Basic Design Study
on the Project for Reconstruction of Manampitiya Bridge
in the Democratic Socialist Republic of Sri Lanka**

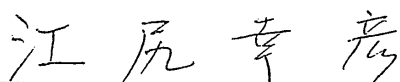
In response to the request from the Government of the Democratic Socialist Republic of Sri Lanka (hereinafter referred to as "Sri Lanka"), the Government of Japan decided to conduct a Basic Design Study on the Project for Reconstruction of Manampitiya Bridge (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to Sri Lanka the Basic Design Study Team (hereinafter referred to as "the Team"), headed by Mr. Yukihiko Ejiri, a Senior Assistant to the Director General of the Office of Technical Coordination and Examination, Grant Aid Management Department, JICA, and is scheduled to stay in the country from July 4 to August 2, 2004.

The Team held discussions with the concerned officials of the Government of Sri Lanka.

In the course of the discussions, both sides have confirmed the main items described in the attached sheets. The Team will proceed to further works and prepare the Basic Design Study Report.

Colombo, July 16 2004

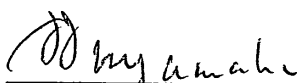


Yukihiko Ejiri
Leader
Basic Design Study Team
Japan International Cooperation Agency



M.M.C. Ferdinando
Chairman
Road Development Authority (RDA)
Democratic Socialist Republic of Sri Lanka

(Witnesses)



J.H.J. Jayamaha
Additional Director General
Department of External Resources
Ministry of Finance
Democratic Socialist Republic of Sri Lanka



S. Amarasekera
Secretary
Ministry of Highways (MOH)
Democratic Socialist Republic of Sri Lanka

ATTACHMENT

1. Objective

The objective of the Project is to construct a new highway bridge at Manampitiya in the vicinity of the railway bridge across the Mahaweli River.

2. Project Site

The site of the Project is shown in Annex-1.

3. Responsible and Implementing Organizations

- (1) The Responsible Ministry is the Ministry of Highways (MOH).
- (2) The Implementing Agency is the Road Development Authority (RDA).
- (3) The organization charts of MOH and RDA are shown in Annex-2.

4. Items Requested by the Government of Sri Lanka

After discussions with the Team, the following items were finally requested by the Sri Lankan side. Construction of a new highway bridge at Manampitiya with the following specifications;

- Two (2) lane (3.7 m x 2), total width: 10.4 m
- Total length: about 300 m
- Approach roads for both sides of the bridge

5. Japan's Grant Aid Scheme

- (1) The Sri Lankan side understands the Japan's Grant Aid scheme and the necessary measures to be taken by the Government of Sri Lanka explained by the Team as described in Annex-3.
- (2) The Sri Lankan side promised to take necessary measures, as described in Annex-4, for smooth implementation of the Project as a condition for the Japan's Grant Aid to be implemented.



6. Schedule of the Study

- (1) The Team will proceed to further studies in Sri Lanka until August 2, 2004.
- (2) JICA will prepare a draft report in English and dispatch the team to Sri Lanka in order to explain its contents around the end of October 2004.
- (3) When the contents of the draft report are accepted in principle by the Government of Sri Lanka, JICA will prepare a final report and send it to the Government of Sri Lanka around the end of January 2005.

7. Other Relevant Issues

- (1) The both sides agreed to rename the original title of the Project from "the Project for Reconstruction of Manampitiya Bridge in the Democratic Socialist Republic of Sri Lanka" to "the Project for Construction of A New Highway Bridge at Manampitiya in the Democratic Socialist Republic of Sri Lanka".

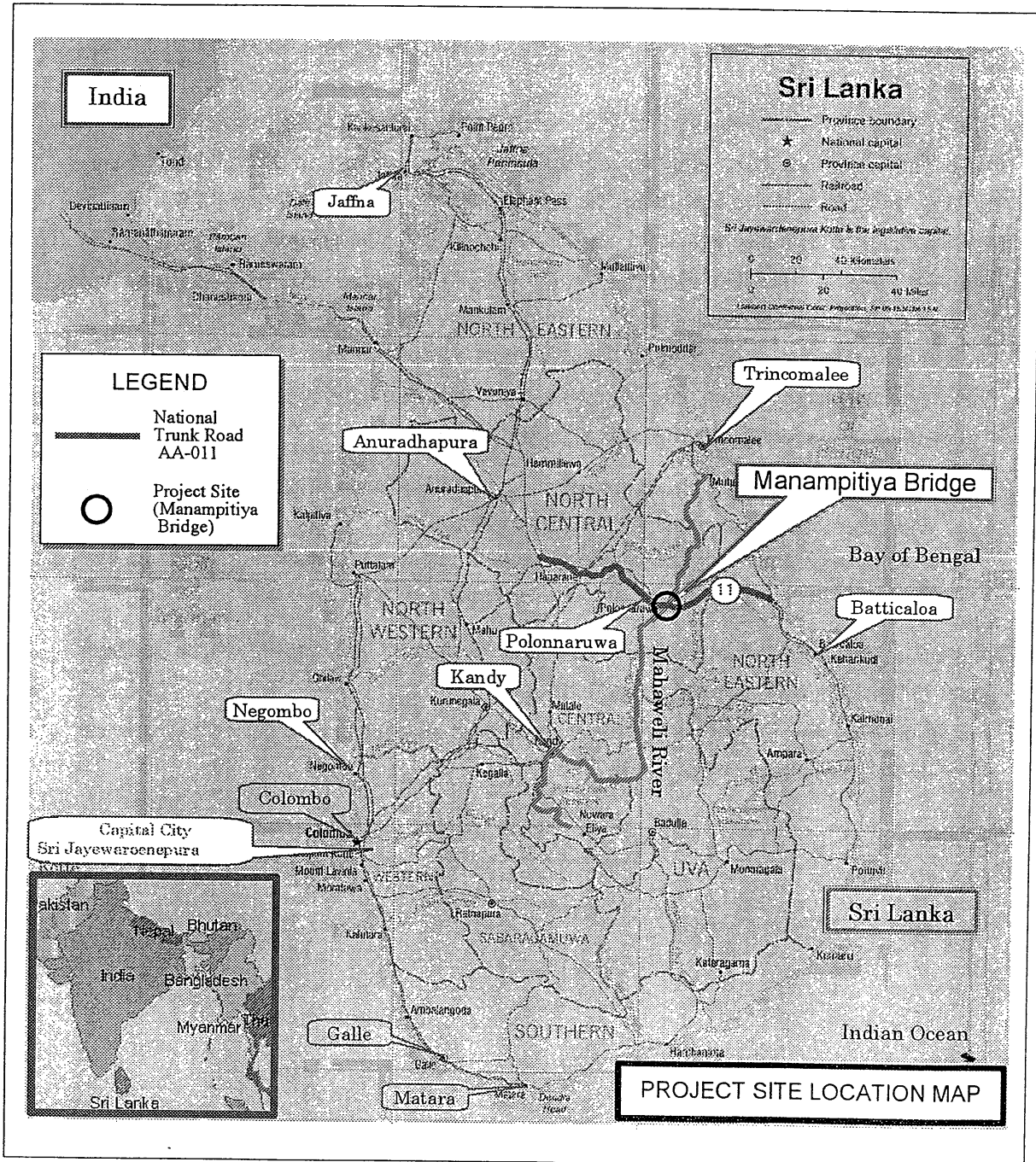
- (2) The both sides confirmed the contents of the clauses No.6, 7, 8, and 9 of the Minutes of Discussion signed on March 5, 2004 (hereinafter referred to as "the Previous M/D") regarding the Environmental and Social Considerations for the Project.
- (3) The Sri Lankan side agreed to include the results of the public information campaigns to local stakeholders regarding involuntary resettlement (including setback) to an Initial Environmental Examination (IEE).
- (4) The Sri Lankan side explained to the Study Team that an IEE should be completed by the middle of August 2004 and the IEE report should be submitted to the Department of Wildlife Conservation (DWC), Ministry of Environment and Natural Resources, by the end of August 2004.
- (5) The Sri Lankan side also agreed to prepare at least a preliminary environmental appraisal of the proposed Project. It will be done on the information of the proposed Project and submitted to the DWC by July 23 so that the results of preliminary assessment by the DWC can be passed on to the environmental specialist of the Study Team by July 28 2004.
- (6) The both sides agreed that the benchmarks for the start of the Detailed Design Study and implementation stage of the Project should be as below;
 - To obtain agreements from all of the Project Affected Persons (PAPs) about the conditions and contents of the resettlement and setback, in principle"
 - To obtain the general environmental approval from the DWC, and confirm that the Project has no significant adverse impacts on the environment and society
- (7) The Sri Lankan side will submit answers in English to the Questionnaire, which the Study Team handed to the Sri Lankan side, by July 27 2004.
- (8) The Sri Lankan side shall provide necessary number(s) of counterpart personnel to the Team during the period of their studies in Sri Lanka.





PROJECT SITE



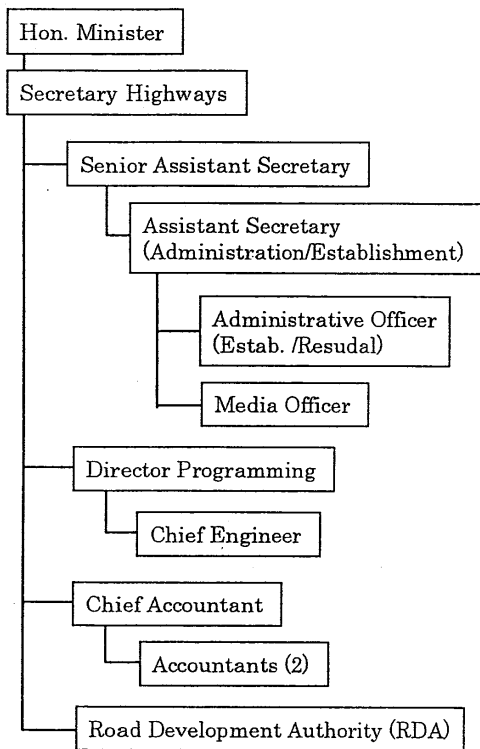
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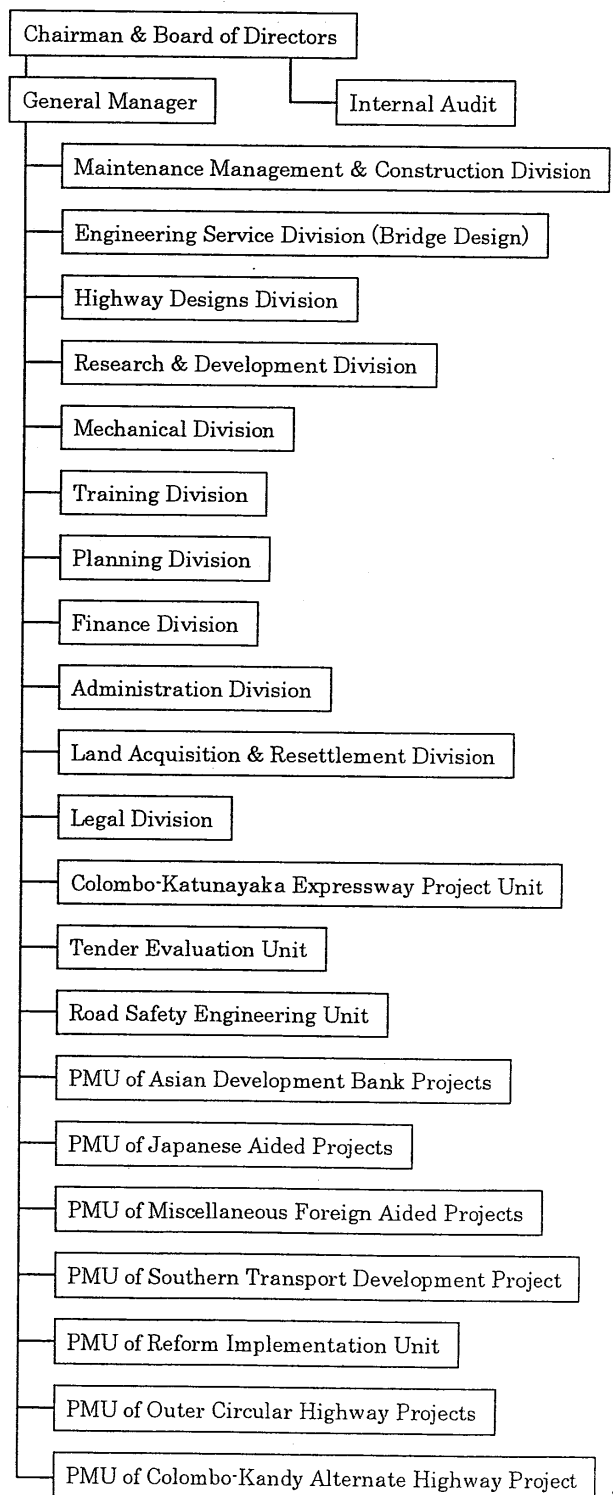
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ORGANIZATION CHART

Ministry of Highways



Road Development Authority (RDA)



Japan's Grant Aid Scheme

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

1. Grant Aid Procedures

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

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

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

Secondly, JICA conducts the study (Basic Design Study), using (a) Japanese consulting firm(s).

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

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

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

2. Basic Design Study

1) Contents of the Study

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

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

- Estimation of costs of the Project

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

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

2) Selection of Consultants

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

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

3. Japan's Grant Aid Scheme

1) Exchange of Notes (E/N)

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

2) "The period of the Grant Aid" means the one fiscal year which the Cabinet approves the Project for. Within the fiscal year, all procedures such as exchanging of the Notes, concluding contracts with (a) consulting firm(s) and (a) contractor(s) and final payment to them must be completed.

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

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

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

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

4) Necessity of "Verification"

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

5) Undertakings required of the Government of the Recipient Country

In the implementation of the Grant Aid project, the recipient country is required to



undertake such necessary measures as the following:

- a) To secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the construction.
 - b) To provide facilities for the distribution of electricity, water supply and drainage and other incidental facilities in and around the sites.
 - c) To secure buildings prior to the procurement in case the installation of the equipment.
 - d) To ensure all the expenses and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid.
 - e) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts.
 - f) To accord Japanese nationals, whose services may be required in connection with the supply of the products and services under the Verified Contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.
- 6) "Proper Use"
The recipient country is required to operate and maintain the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.
- 7) "Re-export"
The products purchased under the Grant Aid should not be re-exported from the recipient country.
- 8) Banking Arrangements (B/A)
a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.
b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an authorization to pay (A/P) issued by the Government of the recipient country or its designated authority.
- 9) Authorization to Pay (A/P)
The Government of the recipient country should bear an advising commission of an Authorization to Pay and Payment commissions to the Bank.

Major Undertakings to be taken by Each Government

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

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

**Minutes of Discussions
on the Basic Design Study
on the Project for Construction of a New Highway Bridge at Manampitiya
in the Democratic Socialist Republic of Sri Lanka
(Explanation on the Draft Report)**

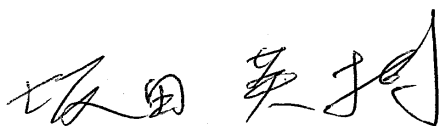
In response to the request from the Government of the Democratic Socialist Republic of Sri Lanka (hereinafter referred to as "Sri Lanka"), the Government of Japan decided to conduct a Basic Design Study on the Project for Construction of a New Highway Bridge at Manampitiya (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to Sri Lanka the Basic Design Study Team (Explanation on the Draft Report) (hereinafter referred to as "the Team"), headed by Mr. Hideki Sakata, the Deputy Resident Representative of the JICA Sri Lanka Office, and is scheduled to stay in the country from October 24 to November 4, 2004.

The Team held discussions with the concerned officials of the Government of Sri Lanka.

In the course of the discussions, both sides have confirmed the main items described in the attached sheets. The Team will proceed to further works and prepare the Basic Design Study Report.

Colombo, November 3, 2004

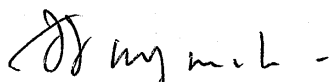


Hideki Sakata
Leader
Basic Design Study Team
Japan International Cooperation Agency



M.M.C. Ferdinando
Chairman
Road Development Authority (RDA)
Democratic Socialist Republic of Sri Lanka

(Witnesses)



J.H.J. Jayamaha
Department of External Resources
Ministry of Finance and Planning
Democratic Socialist Republic of Sri Lanka



S. Amarasekera
Secretary
Ministry of Highways (MOH)
Democratic Socialist Republic of Sri Lanka

ATTACHMENT

1. Components of the Draft Report

The Sri Lankan side agreed and accepted in principle the components of the Draft Report explained by the Team.

2. Schedule of the Study

JICA will complete the Final Report in accordance with the confirmed items and send it to the Sri Lankan side around the end of January 2005.

3. Other Relevant Issues

(1) The Sri Lankan side explained to the Team that the Road Development Authority (RDA) submitted the Initial Environmental Examination (IEE) report to the Department of Wildlife Conservation (DWC), Ministry of Environment and Natural Resources, and already obtained its approval by letter issued on September 10, 2004. The Team discussed about the contents of the letter with RDA and formulated common understandings regarding the conditions (environmental mitigation measures) imposed by DWC for each clause of the above-mentioned letter as per Annex-1. However, the Team requested RDA to discuss / confirm the details of the conditions with DWC and Mahaweli Authority of Sri Lanka (MASL). RDA had discussions on practicality and technical feasibility of the mitigation measures with them and confirmed in writing that there should be flexibility with the conditions as per Annex-2.

(2) The Sri Lankan side explained to the Team that RDA conducted the public information campaigns to local stakeholders regarding involuntary resettlement including setback at Polonnaruwa District Office of RDA on July 21, 2004. The memorandums of the campaigns are attached as Annex-3.

(3) The Sri Lankan side agreed to conduct resettlement of households and relocation of public utilities before the commencement of construction works in accordance with due processes stipulated in the relevant laws and/ or regulations of Sri Lanka.

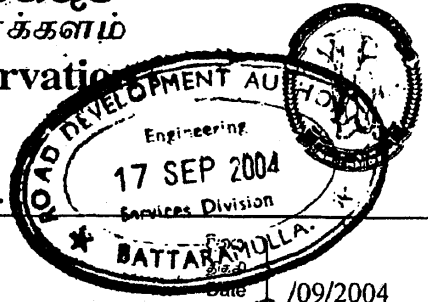
(4) The Sri Lankan side agreed to allocate the budget for securing land(s), relocation of public utilities, undertakings to be done by the Sri Lankan side, which were shown in Annex-4 of the M/D signed by both sides on July 16, 2004, based on the budget of the fiscal year 2005.

(5) The Sri Lankan side submitted the annual maintenance plan for the Bridge including staff assignment and budget allocation of Polonnaruwa District Office of RDA as per Annex-5.



වනජීවී සංරක්ෂණ දෙපාර්තමේන්තුව
வன ஜீவராசி பாதுகாவல் திணைக்களம்
Department of Wildlife Conservation

GENERAL MANAGER'S OFFICE
 No. 18, Gregory's Road, Colombo 07.
 17 SEP 2004
 WI/6/1/9/159
 R. D. A.



මගේ අංකය
 My No.

ඔබේ අංකය
 Your No.

General Manager,
 Road Development Authority.

(Handwritten signatures and initials: J/P, N, Ali, etc.)

Proposed New Highway Bridge at close Vicinity of the Existing Rail Cum Road Bridge at Manampitiya Across Mahaweli Ganga.

This is to inform you that the Department of Wildlife Conservation after studying the IEE Report of the proposed " New Highway Bridge at close Vicinity of the Existing Rail Cum Road Bridge at Manampitiya Across Mahaweli Ganga" and Reviewing the comments from the TEC members and your responses to such comments, has decided, in forms of regulations 9 (1) of the National Environmental (procedure for the approval of projects) Regulations No. 1 of 1993 to grant approval for the implementation of the above project subject to the following conditions.

1.0 General

- 1.1 The project should be concluded within 2 years unless upon written application within thirty days prior to this date Department of Wildlife Conservation extends this time.
- 1.2 Construction activities within the Flood Plains National Park are not allowed from 6.00 p.m. to 6.00 a.m.
- 1.3 All labour camps and machinery units must be placed outside the National Park and outside the 60 m reservation on either side of the Mahaweli Ganga.
- 1.4 Necessary approval should also be obtained from the Mahaweli Authority of Sri Lanka prior to commencement of the construction activities.

2.0 Mitigation of impacts during construction phase of the project.

2.1 Ecological resources

- 2.1.1 Existing high canopy cover (if any) of the project area within the wildlife reserve should not be cleared
- 2.1.2 Any of the existing valuable trees should not be damaged or removed
- 2.1.3 The disturbed areas within the 60 m on either side of the Mahaweli Ganga (Environmental sensitive reservation of the river) should also be replanted with indigenous plant species and horticulture spices for conservation and to improve the aesthetic beauty of the site Suitable plant species are recommended to introduce in the affected areas of the river banks.
- 2.1.4 No borrow areas should be allowed in Flood Plains National Park and 60 m reservations on either side of the Mahaweli Ganga.

කාර්යාලය .அலுவலகம் Office	94-011-2694241	ෆැක්ස් தொலைநகல் Fax	94-011-2698556	ඊ-මේල් மின்னஞ்சல் E-Mail	director@dwlc.lk dg@dwlc.lk
අධ්‍යක්ෂ ජනරාල් பணிப்பாளர் நாயகன் Director General	94-011-2698086	අධ්‍යක්ෂ (පාලන) பணிப்பாளர் (தீர்வாகம்) Director (Admin.)	94-011-2698559	අධ්‍යක්ෂ (මෙහෙයුම්) பணிப்பாளர் (தொழிற்பாடுகள்) Director (Operation)	94-011-2678751

2.2 Mitigation of Social Impacts

2.2.1 The people living inside the project area should be relocated according to the National resettlement policy prepared by the Ministry of Agriculture, Land, Livestock and Irrigation.


2.2.2 The project proponent shall employ as many as possible from the local areas. Preference shall be given to the residents living around the area.

2.3 Noise from the construction activities

The noise levels at the boundaries of the construction site shall not exceed the stipulated limits stated in schedule III of the National Environmental (Noise Control Regulations No. 1 of 1996) as per Gazette extra ordinary No. 924/12 dated 23rd May 1996

We wish to draw your attention to regulation 17 which states.

17. i *A project proponent shall inform the appropriate Project Approving Agency of --*
(a) *any alteration to a proscribed project approved under regulations 9 (i), and 13 (i); and / o*
(b) *the abandonment of such approved project*
- ii *The project proponent shall where necessary obtain fresh approval in respect of any such alterations that are intended to be made to such project. The Project Approving Agency shall in consultation with the authority determine the scope and format of the supplemental report required to be submitted for such alterations.*
- iii *The project proponent shall, where a project is abandoned, restore the project site to a condition as specified by the project approving agency.*


Dayananda Kariyawasam,
Director General of Wildlife Conservation.

Cc. - (1) Secretary, Ministry of Highways - For information Pl.
(2) Director General, Central Environmental Authority - -do-
(3) Director General, Mahaweli Authority of Sri Lanka - -do-



Annex-2

"සෙත්සිරිපාය", බත්තරමුල්ල.
"செத்திரிபாய", பத்தரமுல்லை.
"Sethsiripaya", Battaramulla,
Sri Lanka.

මගේ අංකය RDA/P/RB/MBP
எனது இல. }
My No. }
ඔබේ අංකය
உமது இல. }
Your No. }
දිනය 28.10.2004
திகதி }
Date }
.....

Mr. Dayananda Kariyawasam,
Director General
Wild Life Conservation Department.

**Proposed New Highway Bridge at close Vicinity of the Existing Rail cum Road Bridge
At Manampitiya Across Mahaweli Ganga**

Your attention is kindly drawn to your letter dated 19.09.2004, on the above matter.

Presently the basic Design Study Team is in Sri Lanka to finalise the conceptual design and other preliminaries and they have expressed deep concern on some of the laid down conditions though they are of general nature in our context. Therefore it is necessary to clarify to them that the conditions laid down will not hamper the construction in any significant manner.

With a view to achieve the above it is requested to reconsider some of the general conditions laid down in the approved letter and inform the Team that the following alterations/interpretations are acceptable to the DWC with respect to the IEE approval.

1. The project duration though mentioned as 2 years could extend further depending on the Site conditions.
2. Construction activities could be allowed after 6.00 p.m. depending on the engineering requirements subject to specific security arrangements and acceptable to the DG/DWLC.
3. Machinery units and construction yard could be allowed within the river reservation where it is not practical and economical to travel up and down during construction subject to strict supervision of DG/DWLC.

The above measures are necessary for the economical construction of the above bridge and are generally adopted in the country in carrying out Bridge Construction.

In order to obtain grant aid assistance from Japan through JICA, to construct a new bridge to replace the existing Manampitiya Bridge over Mahaweli Ganga your cooperation in this regard is vital and very much appreciated please.


M.M.C.Ferdinando
CHAIRMAN
ROAD DEVELOPMENT AUTHORITY

- c.c.: (I) Secretary- Ministry of Highways – f.i. pl.
(ii) Additional Secretary – Ministry of Environment and Natural Resources



	Chairman	General Manager	Director Admin.	Director Finance	Director MM&C	General
දුරකථන / தொலைபேசி / Telephone	862767	862795	865245	864799	864804	871821-30
ලැක්ෂ් / பெக்ஸ் / Fax	864801	872272	865844	864799	862297	



Annex-2

වනජීවී සංරක්ෂණ දෙපාර්තමේන්තුව
வன ஜீவராசி பாதுகாவல் திணைக்களம்
Department of Wildlife Conservation

අංක 18, ගුගුරු පාර, කොළඹ 07.

இல-18, கிறகெரி வீதி, கொழும்பு 07.

CHAIRMAN'S No. 18, Gregory's Road, Colombo 07.

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My No. }

01 NOV 2004

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Your No. }දිනය }
திகதி }
Date }
29 /10/2004

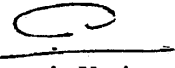
WL/ R.D/9/259A.

Mr.M.M.C. Ferdinando
 Chairman
 Road Development Authority
 Sethsiripaya
 Battaramulla

Proposed New Highway Bridge at Close Vicinity of the Existing Rail cum Road Bridge at Manampitiya Across Mahaweli Ganga

This refers to your letter dated 28th October 2004, and I wish to place the following with regard to your issues raised therein.

- 1 We do not have any objection to extend the project duration with valid justification to avoid undue delays and continued disturbance to the fauna in the area.
- 2 Depending on the engineering requirements, construction activities could be allowed after 6.00 p.m. depending on the nature and the exact location of the activity. This could be jointly agreed by the RDA and the DWC.
- 3 A yard for machinery which is not practical and economical to travel up and down during the construction period could be allowed in a suitable location without any disturbance to present landscape through a joint inspection of the area by DWC and RDA.
- 4 I believe the above clarifications would suffice for you to proceed with your planned efforts in obtaining assistance to construct the new bridge to replace the existing Manampitiya Bridge over Mahaweli Ganga.


 Dayananda Kariyawasam
 Director General

Copy: Assistant Director (Mahaweli) – For information please.

තැපෑල }
அலுவலகம் } 94-011-2694241
Office }

ෆැක්ස් }
தொலைநகல் } 94-011-2698556
Fax }

ඊ-මේල් } director@dwlc.lk
மின்னஞ்சல் } dg@dwlc.lk
E-Mail }

අධ්‍යක්ෂ ජනරාල් }
பணிப்பாளர் நாயகம் } 94-011-2698086
Director General }

අධ්‍යක්ෂ (පාලන) }
பணிப்பாளர் (நிர்வாகம்) } 94-011-2698559
Director (Admin.) }

අධ්‍යක්ෂ (මෙහෙයුම්) }
பணிப்பாளர் (தொழிற்பாடுகள்) } 94-011-2678751
Director (Operation) }

Annex-2

28th October 2004.

The Director General
Mahaweli Authority of Sri Lanka
T.B. Jaya Mawatha
Colombo 10.

Construction of a New Highway Bridge at Bridge No: 81/2 on Maradankadawala-Habarana-Thirikondiyadimadu (A11) Road across Mahaweli Ganga at Manampitiya

This has reference to my letter of even number dated 28th July 2004 seeking your co-operation for the Initial Environmental Examination (IEE) carried out by the Road Development Authority to obtain the environmental clearance from the Department of Wild Life Conservation (DWC) for the implementation of the above project. As I intimated therein Mr. M.M.S.A. Perera, Additional Director of your authority served in the Technical Evaluation Committee appointed by the DWC for the IEE study.

The Director General of Wildlife Conservation in his letter No. W1/6/1/9/159 dated 10/09/2004 addressed to the General Manager, RDA with copies to you and others granted approval for the implementation of the project subject to certain conditions indicated therein. Two of the conditions given below stipulated in the approval letter under general, include issues requiring attention of your organization.

- All labour camps and machinery units must be placed outside the 60 m reservation on either side of Mahaweli Ganga.
- Necessary approval should also be obtained from the Mahaweli Authority of Sri Lanka prior to commencement of the construction activities.

The JICA Basic Design Study Team presently in Sri Lanka expects to finalise the Minutes of Discussion on the Basic Design Study of the above referred project in order to forward same to the Government of Japan for the approval of the project under the Grant Aid Assistance.

For this purpose it is necessary for the RDA to confirm to the Study Team that the general approval of the Mahaweli Authority of Sri Lanka (MASL) is available for the implementation of the project as required under the IEE approval.

Also the concurrence of the MASL to use an area of 15000 sq. m on the left bank and 5000 sq. m on the right bank within the reservation of Mahaweli Ganga just adjacent to the corridor of the new bridge for the construction yard and site offices.

We wish to mention that the basic design proposal submitted by the JICA team confirms the adoption of same span lengths for the new highway bridge in order to locate the mid piers in line with the existing piers of the existing bridge to ensure minimal effects to the river flow due to the construction of this new bridge as indicated in my earlier letter to you. Also that the soffit of the bridge will be maintained at the same level as that of the existing bridge.

Annex-2

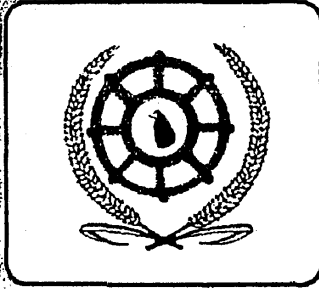
As such it is much appreciated if you would confirm in writing your approval for the construction of the bridge and make available the above indicated land areas on the river banks for the use of construction activities.

Your co-operation on this national project is greatly appreciated please.



Dr. G.L. Asoka J. De Silva
Director / Engineering Services
for General Manager
ROAD DEVELOPMENT AUTHORITY





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இலங்கை மகாவலி அதிகாரசபை
Mahaweli Authority of Sri Lanka

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500, T.B. Jayah Mawatha, Colombo 10.

Our Ref.RBM/402
Your Ref.RDA/ES/JICA-BMP Vol IV

2nd November 2004

General Manager
Road Development Authority
Sethsiripaya
Battaramulla.


ATTN: Dr. G.L. Asoka J. De Silva, Director/Engineering Services

Construction of a New Highway Bridge at Bridge No. 81/2 on Maradankadawala, Habarana – Thirikondivadimadu (A 11) Road Across Mahaweli Ganga at Manampitiya

This has reference to your letter of 28th October 2004 on the above. Mahaweli Authority of Sri Lanka (MASL) will grant approval to use the land area necessary for the construction of the above bridge and the roadway within the 60 M. reservation on either side of the left and right banks of the Mahaweli Ganga.

It should be noted that 60 M. on either side of the Mahaweli Ganga is the protected reservation (environmental sensitive) of the Mahaweli Ganga.

It is regretted that MASL cannot grant concurrence for your request to use an area of 15,000 Sq. M. on left bank and 5,000 Sq. M. on right bank within the reservation of the Mahaweli Ganga for the construction yard and site Office. In this regard you may liaise with the DWLC as the land area outside 60 M. on either side of the river falls within the jurisdiction of the DWLC. I am also annexing herewith the letter (Ref. No.RBM/402 dated 27.8.2004) addressed to the Head of the Project Approving Agency (PAA) for the above project (Director General of the Dept. of Wild Life Conservation-DWLC) regarding 60 M. reservation of the Mahaweli Ganga.


Dr. M.U.A. Tennakoon
Director General
Mahaweli Authority of Sri Lanka

MMSRP/uks

CC. Director General-DWLC - for information please
Executive Director – Technical Services - for information & necessary action please

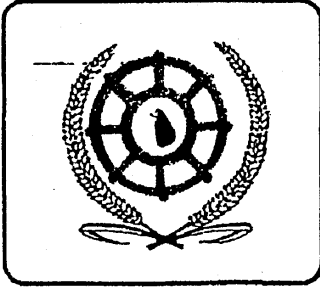
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பொது இயக்குனர் } 687238
Director General }

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பொது அலுவலகம் }
General Office }

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687491-5 }
MAHAGANGA }
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இலங்கை மகாவலி அதிகாரசபை
Mahaweli Authority of Sri Lanka

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500, T.B. Jayah Mawatha, Colombo 10.

Our Ref:RBM/402
Your Ref:WL/6/1/9/159

27th August 2004

Mr. Dayananda Kariyawasam
Director General of Wild Life Conservation
Dept. of Wild Life Conservation

PROPOSED NEW HIGHWAY BRIDGE AT CLOSE VICINITY OF EXISTING RAIL CUM ROAD BRIDGE AT MANAMPITIYA ACROSS MAHAWELI GANGA – IEE REPORT

This has reference to your letter of 13th August 2004 regarding the abovementioned IEE Report.

It is appreciated that if you could include the following as conditions on granting Environmental approval for the proposed new highway bridge at Manampitiya across Mahaweli ganga.

- The riverbanks of the disturbed areas should be replanted using indigenous bank stabilization species. Other precautionary measures such as gabions etc. should also be constructed when ever necessary to stabilize the effected bank of the Mahaweli River.
- Relocation package should be in place before the commencement of the construction activities. Relocation sites should be located away from the 60 M reservation on either side of the Mahaweli Ganga and away from the flood plain National Park, which is an important protected area to maintain the integrity of the Mahaweli Systems of protected areas.
- The disturbed areas within the 60 M on either side of the Mahaweli Ganga (Environmental sensitive reservation of the river) should also be replanted with indigenous plant species and horticulture species for conservation and to improve the aesthetic beauty of the site.
- No camps should be permitted to construct within 60 M reservation on either side of the Mahaweli Ganga.
- No borrow areas should be allowed within 60 M reservations on either side of the Mahaweli Ganga.
- Necessary approval should also be obtained from the Mahaweli Authority of Sri Lanka prior to commencement of the construction activities.

M.U.A. Tennakoon
Dr. M.U.A. Tennakoon
Director General
Mahaweli Authority of Sri Lanka

CC - Addl. Director (Env.)/RBP&M of MASI

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பேர்து இயக்குனர்
Director General } 687238

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பொது அலுவலகம்
General Office

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கேபல்
ෆැක්ස්
பெக்ஸ்

Telephone
Cable
Fax

} 687491-5
MAHAGANGA
687240

Minutes of the Public Awareness Meeting held on 21.07.2004 for the Construction of Manampitiya Bridge

This meeting was conducted by the Chief Engineer, RDA/ Polonnaruwa with the participation of Executive Engineer, RDA/ Polonnaruwa and T.OO. Mr. W.M. Gemunu & Mr. M.T.S. Perera of RDA at the C.E.'s office Polonnaruwa on 21st July 2004 at 11.00 a.m. to make the people involved in sand mining near the bridge and the people where there is a possibility of whose houses may get affected due to the construction of bridge aware of the construction of the new bridge.

At the outset the Chief Engineer intimated to the participants that the New Bridge would be located 50m upstream of the existing bridge and he requested the fullest corporation for this work from them.

Then the participants have stated that there is no any sand harvesting activity or any brick cutting industry at the proposed bridge location but close proximity is used only to pile the harvested sand.

At this instance in the process of the discussion the Chief Engineer informed the participants that RDA has no authority for approval of sand mining or any other industry to be carried out at the bridge site but only the Wild Life Department has the sole authority on these issues.

Then most of the people living in the area under reference who participated at this meeting have admitted that the sand mining activity near the bridge and the residences that they have put up are illegal and have also disclosed that the WLCD has already filed court cases against them.

The house owners requested payment of compensation for the houses that may have to be removed for the construction of the new bridge and the C.E. intimated to them that he would inform this matter to the Head Office.

Further at this point the CE has informed the participants that a team of RDA officers would visit the people living in the vicinity of the proposed bridge site on 26.07.2004 to obtain further details and information and he expects their corporation for same.

In concluding the meeting the CE explained the benefits of construction of this bridge and the importance of extending their co-operation for the implementation of this project and thanked them for their participation at the meeting.

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(Public Awareness meeting held on 21-07-2004 for the construction of Manampitiya Bridge)

(Attendance list)

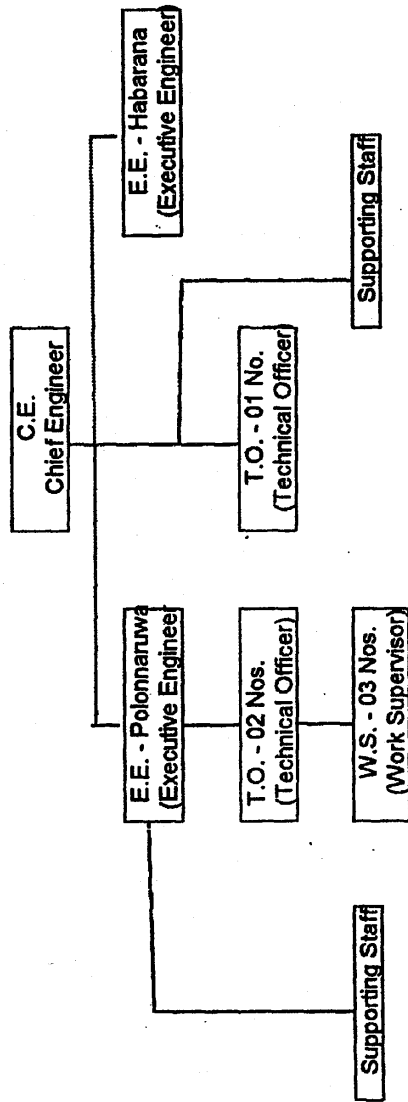
(No)	(Name)	(Designation & Address)	(Signature)
01.	A.S.A. අසාර	පුලුබදා පුලුබදා, 27-3002	
02.	W.R. විජේසේකර	වික්‍රමානන්ද පුලුබදා, පුලුබදා	
03.	M.W. මුනුබුදු	කැපුණි පාරේ, පුලුබදා	
04.	සුනිල් පෙරේරා	කැපුණි පාරේ, පුලුබදා	
05.	L.A. ලීපිපා	කැපුණි පාරේ, පුලුබදා	
06.	R.M.C. හේරත්	කැපුණි පාරේ, පුලුබදා	
07.	W. සාමන්තා	කැපුණි පාරේ, පුලුබදා	
08.	G. අජිත් කුමාර	කැපුණි පාරේ, පුලුබදා	
09.	W. සීලසාතිය	කැපුණි පාරේ, පුලුබදා	
10.	D.P.P. ජයසර්දනා	කැපුණි පාරේ, පුලුබදා	
11.	K.A. අජිත් කුමාර	කැපුණි පාරේ, පුලුබදා	
12.			

Major Undertakings to be taken by Each Government

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

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

**Organization Chart of the Chief Engineers' Office
Polonnaruwa
R.D.A.**



[Handwritten marks: a triangle, a signature, and a number 2]

To JICA - Basic Design Team

Annex-5

My No. RDA/JAP/ACTION PLAN

Japan Aided Projects Division,
Road Development Authority,
Battaramulla.

9th September, 2004.

Attn: Chief Accountant - M/H

Secretary,
MINISTRY OF HIGHWAYS

BUDGET ESTIMATE FOR THE YEAR 2005

With reference to your letter No. MH/AC5/EST/2005 dated 02.09.2004, we are forwarding herewith the duly filled format on the above subject for you to submit to the treasury.

0/4
JK
Director,
JAPAN AIDED PROJECTS,
ROAD DEVELOPMENT AUTHORITY.

AccPln/anj/rs/09/09/04

4 *JK* *8*
* Sent to Chief Acct. M/H
on 10/9/04. (copy to Acct
Proj JAP)

PROJECT SUMMARY - 2005 - 2007

Ministry/ Department

Head No. 181 Name : Ministry of Highways
 Programme No. 50 Name : Construction & Maintenance of Highways
 Project No. 08 Name : Japan Funded Projects

Manampitiya Bridge (JICA Grant Aid)

Project Objective
Replace the old narrow Bridge and to provide ^{passage} passes for the free movement of traffic along this road across the river Mahaweli.

Key Activities
MOU signed for the Manampitiya Bridge
IEE being carried out as requested by CEA
Japanese Design Team arrived for Basic Designs

Activity No.	Performance Indicator	Actual 2003 Rs. Mn.	Estimate		Projection	
			2004 Rs. Mn.	2005 Rs. Mn.	2006 Rs. Mn.	2007 Rs. Mn.
				30	40	20

Appendix 5. Cost Estimation borne by Sri Lanka

5-1 Project Cost

In order to implement the Project, the Government of Sri Lanka is required to undertake the measures and obligation indicated in the table below.

Measures and Obligation by the Government of Sri Lankan

No.	Item	Contents	Cost (Mill. Rs.)
1	Tax exemption measures	All goods and services related to the Project which are subject to taxation in Sri Lanka shall be exempted. Legal procedure required for application of tax exemption shall be duly enforced by Sri Lanka side.	Required (internal domestic expenses)
2	Land for Project Implementation	Land acquisition shall not be required for access road and bridge construction. Some of the land is government property	Not required
3	Temporary office, accommodations, storage, workshop	Rented ground for : 14,700 m ² on the left bank • 5,300 m ² on the right bank	Not required
4	Sites for acquiring construction materials	Coarse aggregate: by purchase contract Fine aggregate: River sand from Mahabeli river • Borrow material : from land owned by Sri Lanka government	Not required
5	Relocation of public facilities	<ul style="list-style-type: none"> • Left bank: High voltage feeders • Right bank: Houses owned by sand supplier • Low voltage feeders at Police Dept. facilities 	1.25 0.15 0.24
Total			1.64

5-2 Operation and Maintenance Cost

Operation and maintenance costs after the start of operation are shown in below.

It is assumed that routine maintenance will be executed every year and periodic maintenance every 10th year after the start of operation.

Operation and Maintenance for Project Bridge

Period	Works	Specification	Unit Price (Rs)	Unit	Quantity	Years	Total (Rs.)
Routine Maintenance (Approach road) (every year)	Repair of pavement	1.0% of total area / year	1,870	m2	34	9	572,200
	Drainage repair	0.1% of total piece / year	538,000	each	0.026	9	125,900
	Slope repair	0.5% of total area / year	3,070	m2	13	9	359,200
	Sub-total for Routine maintenance (for 9 yeas)						
Periodic Maintenance (Bridge/Approach road) (10 th year)	Repair of pavement	10% of total area	1,870	m2	336	1	628,300
	Railing & curve	5% of total length	10,500	m	30	1	315,000
	Drainage repair	5% of total number	538,000	each	1.3	1	699,400
	Slope repair	5% of total area	3,070	m2	130	1	399,100
Sub-total for Periodic maintenance (per time)							2,041,800
Operation & Maintenance Cost		10% of the Sub-total		1	lot	1	204,200
10 years Total Operation & maintenance Cost (Average maintenance cost per year)							3,303,300 (330,300)

Estimation Condition

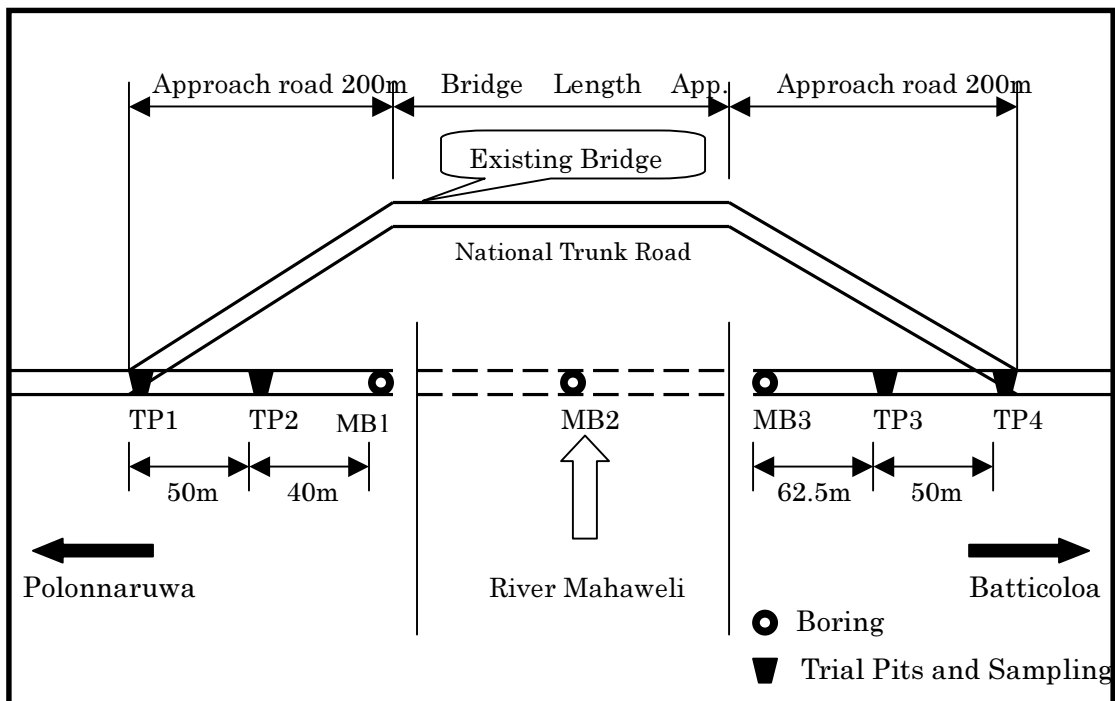
- Time of estimate August 2004
- Exchange rate 1US\$ = JPY109.97
1Rs = JPY1.12
- Implementation period Detailed design and construction period are shown in the Implementation schedule (i.e. 24 months excluding tendering stage).
- Others The Project will be implemented according to the Japan's Grant Aid Scheme.
The above-mentioned exchange rate is to be reviewed by GOJ

6. Geological Data


6-1 Boring Log


Summary of borehole investigation

Borehole no.	Coordinates		Drilling in Overburden (m)	Drilling in rock (m)	Total Depth (m)
	Northing	Easting			
MB-01	600895.4110	534641.1560	21.65	5.00	26.65
MB-02	600899.4784	534786.8011	15.85	3.00	18.85
MB-03	600903.7080	534936.4250	19.15	2.85	22.00




The Site Sketch with Survey locations


 Engineering & Laboratory Services (Pvt) Ltd.		Borehole No : MB - 01						
Equipment & Methods : Rotary drilling with SPT		Location : Manampitiya Bridge.						
Carried out for :		Elevation : 35.928m. Chainage :						
M/s. Oriental Consultants Co. Ltd.,		Co-ordinate 600895.4110 13/07/2004						
		G.W.L 3.60m. 534641.1560 22/07/2004						
Description of Strata	Reduced Level (m)	Legend	Depth (m)	Sample / Test			Field Records	
				Depth & Thickness (m)	Type	No		Test
LOOSE TO MEDIUM DENSE DARK BROWN TO BROWN SILTY FINE SAND			1	1.00 - 1.45			S N=9 3 4 5	
			2	2.00 - 2.45			S N=12 3 5 7	
			3	3.00 - 3.45			S N=8 3 4 4	
LOOSE BROWN TO LIGHT BROWN SLIGHTLY SILTY FINE TO MEDIUM SAND			4	4.00 - 4.45			S N=11 4 5 6	
			4.45					
MEDIUM DENSE LIGHT BROWN TO BROWN SLIGHTLY FINE GRAVELY MEDIUM TO COARSE SAND			5	5.00 - 5.45			S N=13 5 5 8	
			6	6.00 - 6.45			S N=6 6 4 2	
			7	7.00 - 7.45			S N=15 5 6 9	
			8	8.00 - 8.45			S N=16 5 7 9	
			9	9.00 - 9.45			S N=25 5 10 15	
			10					
SPT : Where full 0.3 m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value) Depths : All depths and reduced levels in meter. GWL : Ground Water Level observed inside the Borehole, after the saturation.		Sample Key / Test Key D - Disturbed Sample B - Bulk Sample W - Water Sample WS - Wash Sample UD - Undisturbed Sample - Position (P) Tube (u)		S - Standard Penetration Test (SPT) V - Vane Test C - Core Recovery (CR), % R - Rock Quality Designation (RQD) % HB - Hammer Bounce FD - Free Down		Remarks: Existing Ground level taken as Zero.		Logged By : R.M.W.K.Rathnayake Supervised By: Randil Asiri Drilled By: K. A. Somasiri Scale 1:50 Fig.


 Engineering & Laboratory Services (Pvt) Ltd.		Borehole No : MB - 01					
Equipment & Methods : Rotary drilling with SPT		Location : Manampitiya Bridge.					
Carried out for :		Elevation : 35.928m. Chainage : Date					
M/s. Oriental Consultants Co. Ltd.,		Co-ordinate 600895.4110 13/07/2004					
G.W.L 3.60m.		534641.1560 22/07/2004					
Description of Strata	Reduced Level (m)	Legend	Depth (m)	Sample / Test			Field Records
				Depth & Thickness (m)	Type	No	
MEDIUM DENSE LIGHT BROWN TO BROWN SLIGHTLY FINE GRAVELLY MEDIUM TO COARSE SAND			10.00-10.45			S N=11	1 3 8
			11.00 - 11.45			S N=33	7 20 13
			11.45				
MEDIUM DENSE TO DENSE GREY TO BROWNISH GREY SILTY FINE SAND			12.00-12.45			S N=22	3 7 15
			13.00-13.45			S N=34	6 13 21
			14.00-14.45			S N=37	7 14 23
			15.00-15.45			S N=23	7 10 13
DENSE GREYISH BROWN TO GREY SILTY MEDIUM TO COARSE SAND			16.00-16.45			S N=36	11 16 20
			17.00-17.45			S N=24	7 10 14
			18.00 - 18.45			S N=32	9 15 17
			19.00 - 19.45			S N=39	20 21 18
			20				

SPT : Where full 0.3 m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value)	Sample Key / Test Key D - Disturbed Sample B - Bulk Sample W - Water Sample WS-Wash Sample UD- Undisturbed Sample - Position (P) Tube (u)	S - Standard Penetration Test (SPT) V - Vane Test C - Core Recovery (CR), % r -Rock Quality Designation (RQD) % HB-Hammer Bounce FD- Free Down	Remarks: Existing Ground level taken as Zero.	Logged By : R.M.W.K.Rathnayake Supervised By: Randil Asiri Drilled By: K. A.Somasiri
Depths : All depths and reduced levels in meter.				
GWL : Ground Water Level observed inside the Borehole, after the saturation.				Scale 1:50 Fig.


 Engineering & Laboratory Services (Pvt) Ltd.		Borehole No : MB - 01					
Equipment & Methods : Rotary drilling with SPT		Location : Manampitiya Bridge.					
Carried out for :		Elevation : 35.928m. Chainage : Date					
M/s. Oriental Consultants Co. Ltd.,		Co-ordinate 600895.4110 13/07/2004					
G.W.L 3.60m.		534641.1560 22/07/2004					
Description of Strata	Reduced Level (m)	Legend	Depth (m)	Sample / Test			Field Records
				Depth & Thickness (m)	Type	No	
GREENISH GREY TO GREYISH BLACK SILTY FINE SAND COMPLETELY WEATHERED ROCK			20.00 - 20.45			S N>50	287cm/HB
			21.00 - 21.45			S N>50	353cm/HB
GREENISH GREY MEDIUM GRAINED MODERATELY DISCOLOURED HIGHLY FRACTURED THINLY FOLIATED MODERATELY WEATHERED BIOTITE GNEISS			21.65 - 22.50	100%	0%		
GREY MEDIUM GRAINED SLIGHTLY DISCOLOURED HIGHLY FRACTURED SLIGHTLY WEATHERED BIOTITE GNEISS 23.10m - 23.20m MODERATELY WEATHERED ROCK			23.10 - 24.10	100%	9%		
GREENISH GREY MEDIUM GRAINED MODERATELY DISCOLOURED HIGHLY FRACTURED MODERATELY WEATHERED BIOTITE GNEISS			24.10 - 25.10	65%	12%		
GREY MEDIUM GRAINED SLIGHTLY DISCOLOURED HIGHLY FRACTURED SLIGHTLY WEATHERED BIOTITE GNEISS MODERATELY WEATHERED AREA IN BETWEEN.			25.10 - 26.65	68%	0%		
BOREHOLE TERMINATED AT DEPTH OF THE 26.65m.			26.65 - 30.00	C	r		


SPT : Where full 0.3 m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value)	Sample Key / Test Key D - Disturbed Sample B - Bulk Sample W - Water Sample WS - Wash Sample UD - Undisturbed Sample - Position (P) Tube (u)	S - Standard Penetration Test (SPT) V - Vane Test C - Core Recovery (CR), % r - Rock Quality Designation (RQD) % HB - Hammer Bounce FD - Free Down	Remarks: Existing Ground level taken as Zero.	Logged By : R.M.W.K.Rathnayake Supervised By: Randil Asiri Drilled By: K. A. Somasiri Scale 1:50 Fig.
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 Engineering & Laboratory Services (Pvt) Ltd.		Borehole No : MB - 02					
Equipment & Methods : Rotary drilling with SPT		Location : Manampitiya Bridge.					
Carried out for :		Elevation : 31.755m Chainage : Date					
M/s. Oriental Consultants Co. Ltd.,		Co-ordinate 600899.4784 21/07/2004					
G.W.L 0.00m.		534786.8011 24/07/2004					
Description of Strata	Reduced Level (m)	Legend	Depth (m)	Sample / Test			Field Records
				Depth & Thickness (m)	Type	No	
LOOSE BROWN TO YELLOWISH BROWN SLIGHTLY SUBANGULAR TO SUBROUNDED FINE GRAVELLY MEDIUM TO COARSE SAND			1	1.00 - 1.45			S N=9 1 4 5
			2	2.00 - 2.45			S N=10 2 4 6
			3	3.00 - 3.45			S N=19 4 9 10
MEDIUM DENSE BROWN TO YELLOWISH BROWN SLIGHTLY SILTY SUBANGULAR TO SUBROUNDED FINE TO MEDIUM GRAVELLY MEDIUM TO COARSE SAND			4	4.00 - 4.45			S N=20 5 8 12
			5	5.00 - 5.45			S N=23 6 9 14
			6	6.00 - 6.45			S N=20 6 8 12
			7	7.00 - 7.45			S N=25 8 12 13
			8	8.00 - 8.45			S N=24 8 12 12
			9	9.00 - 9.45			S N=26 9 11 15
			10				
SPT : Where full 0.3 m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value) Depths : All depths and reduced levels in meter. GWL : Ground Water Level observed inside the Borehole, after the saturation.	Sample Key / Test Key D - Disturbed Sample B - Bulk Sample W - Water Sample WS - Wash Sample UD - Undisturbed Sample - Position (P) Tube (u)			S - Standard Penetration Test (SPT) V - Vane Test C - Core Recovery (CR), % r - Rock Quality Designation (RQD) % HB - Hammer Bounce FD - Free Down		Remarks: Existing Ground level taken as Zero.	Logged By : R.M.W.K.Rathnayake Supervised By: Randil Asiri Drilled By: K. A. Somasiri Scale 1:50 Fig.

 Engineering & Laboratory Services (Pvt) Ltd.		Borehole No : MB - 02					
Equipment & Methods : Rotary drilling with SPT		Location : Manampitiya Bridge.					
Carried out for :		Elevation : 31.755m Chainage :					
M/s. Oriental Consultants Co. Ltd.,		Co-ordinate 600899.4784 21/07/2004					
G.W.L 0.00m.		534786.8011 24/07/2004					
Description of Strata	Reduced Level (m)	Legend	Depth (m)	Sample / Test			Field Records
				Depth & Thickness (m)	Type	No	
MEDIUM DENSE BROWN TO YELLOWISH BROWN SLIGHTLY SILTY SUBANGULAR TO SUBROUNDED FINE TO MEDIUM GRAVELLY MEDIUM TO COARSE SAND			10.00-10.45			S N=28	10 12 16
			11 11.00 - 11.45			S N=27	10 12 15
			12 12.00-12.45			S N=31	12 14 17
			13 13.00-13.45			S N=29	10 13 16
			14 14.00-14.45			S N=26	11 12 14
			15 15.00-15.45			S N>50	50/5cm/HB
BLACKISH GREY TO GREY SILTY FINE SAND COMPLETELY WEATHERED ROCK			15.60				
			15.85				
GREY MEDIUM GRAINED THINLY FOLIATED FRESH BIOTITE GNEISS			16			90%	68%
			17				
GREY MEDIUM GRAINED THINLY FOLIATED FRESH GNEISSIC ROCK MODERATELY FRACTURED ROCK FRACTURES - 15° - 20° TO THE HORIZONTAL			17.35			90%	51%
			18				
BOREHOL TERMINATED AT DEPTH OF 18.85m.			18.85			C	r
			19				
			20				

SPT : Where full 0.3 m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value)	Sample Key / Test Key D - Disturbed Sample B - Bulk Sample W - Water Sample WS-Wash Sample UD- Undisturbed Sample - Position (P) Tube (u)	S - Standard Penetration Test (SPT) V - Vane Test C - Core Recovery (CR), % r-Rock Quality Designation (RQD) % HB-Hammer Bounce FD- Free Down	Remarks: Existing Ground level taken as Zero.	Logged By : R.M.W.K.Rathnayake Supervised By: Randil Asiri Drilled By: K. A.Somasiri Scale 1:50 Fig.
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 Engineering & Laboratory Services (Pvt) Ltd.		Borehole No : MB - 03						
Equipment & Methods : Rotary drilling with SPT		Location : Manampitiya Bridge.						
Carried out for :		Elevation : 35.673m. Chainage :						
M/s. Oriental Consultants Co. Ltd.,		Co-ordinate 600903.7080 23/07/2004						
G.W.L 3.90m.		534936.4250 24/07/2004						
Description of Strata	Reduced Level (m)	Legend	Depth (m)	Sample / Test			Field Records	
				Depth & Thickness (m)	Type	No		Test
LOOSE BROWN SILTY FINE SAND			1 1.00 - 1.45			S N=12	5 5 7	
MEDIUM DENSE BROWN SLIGHTLY SILTY CLAYEY FINE SAND			2 2.00 - 2.45			S N=9	5 4 5	
			3 3.00 - 3.45			S N=12	5 5 7	
			3.90 4					
SOFT GREY TO YELLOWISH GREY SLIGHTLY SILTY CLAY			5 5.00 - 5.45	UD		S N=06	3 3 3	
			6 6.00 - 6.45			S N=10	6 5 5	
SOFT BLACK TO DARK GREY SLIGHTLY FINE SANDY ORGANIC CLAY			6.40 6.50					
			7 7.00 - 7.45			S N=11	4 5 6	
FIRM DARK BROWN TO YELLOWISH BROWN SLIGHTLY FINE SANDY SILTY CLAY			8 8.00 - 8.45			S N=12	4 5 7	
			8.90 9 9.00 - 9.45			S N=17	4 8 9	
SAME AS NEXT DESCRIPTION			10					
SPT : Where full 0.3 m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value) Depths : All depths and reduced levels in meter. GWL : Ground Water Level observed inside the Borehole, after the saturation.		Sample Key / Test Key D - Disturbed Sample B - Bulk Sample W - Water Sample WS - Wash Sample UD - Undisturbed Sample - Position (P) Tube (u)		S - Standard Penetration Test (SPT) V - Vane Test C - Core Recovery (CR), % r - Rock Quality Designation (RQD) % HB - Hammer Bounce FD - Free Down		Remarks: Existing Ground level taken as Zero.		Logged By : R.M.W.K.Rathnayake Supervised By: Randil Asiri Drilled By: K. A. Somasiri
						Scale 1:50 Fig.		

 Engineering & Laboratory Services (Pvt) Ltd.		Borehole No : MB - 03							
Equipment & Methods : Rotary drilling with SPT		Location : Manampitiya Bridge.							
Carried out for :		Elevation : 35.673m. Chainage :							
M/s. Oriental Consultants Co. Ltd.,		Co-ordinate 600903.7080 23/07/2004							
G.W.L 3.90m.		534936.4250 24/07/2004							
Description of Strata	Reduced Level (m)	Legend	Depth (m)	Sample / Test			Field Records		
				Depth & Thickness (m)	Type	No		Test	
VERY STIFF BROWNISH RED, BROWN, RED FINE SANDY CLAY			10.00-10.45			S N=20	5 8 12		
			11.00 - 11.45			S N=26	6 12 14		
			12.00-12.45			S N=21	5 10 11		
YELLOW, YELLOWISH GREY CLAYEY FINE TO MEDIUM GRAVELLY COARSE SAND COMPLETELY WEATHERED ROCK			12.90 13.00-13.45			S N=18	10 9 9		
			14.00-14.45			S N=33	10 13 20		
			15.00-15.45			S N>50	35/5cm/HB		
BLACKISH GREY TO GREY FINE SANDY SILT COMPLETELY WEATHERED ROCK			16.00-16.45						
			17.00-17.45						
			18.00-18.45						
			19.00-19.45						
GREY MEDIUM GRAINED MODERATELY DISCOLOURED HIGHLY FRACTURED MODERATELY WEATHERED BIOTITE GNEISS			19.15 20.00-20.45			61% 36%			
SPT : Where full 0.3 m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value) Depths : All depths and reduced levels in meter. GWL : Ground Water Level observed inside the Borehole, after the saturation.		Sample Key / Test Key D - Disturbed Sample B - Bulk Sample W - Water Sample WS-Wash Sample UD- Undisturbed Sample - Position (P) Tube (u)		S - Standard Penetration Test (SPT) V - Vane Test C - Core Recovery (CR), % r -Rock Quality Designation (RQD) % HB-Hammer Bounce FD- Free Down		Remarks: Existing Ground level taken as Zero.		Logged By : R.M.W.K.Rathnayake Supervised By: Randil Asiri Drilled By: K. A. Somasiri Scale 1:50 Fig.	

 Engineering & Laboratory Services (Pvt) Ltd.		Borehole No : MB - 03					
Equipment & Methods : Rotary drilling with SPT		Location : Manampitiya Bridge.					
Carried out for :		Elevation : 35.673m. Chainage :					
M/s. Oriental Consultants Co. Ltd.,		Co-ordinate 600903.7080 23/07/2004					
		G.W.L 3.90m. 534936.4250 24/07/2004					
Description of Strata	Reduced Level (m)	Legend	Depth (m)	Sample / Test			Field Records
				Depth & Thickness (m)	Type	No	
SAME AS PREVIOUS DESCRIPTION			20.30				
GREY MEDIUM GRAINED MMODERATELY DEISCOLOURED HIGHLY FRACTURED MODERATELY WEATHERED BIOTITE GNEISS 21.35m - 21.60m SLIGHTLY WEATHERED ROCK			21	50%	18%		
GREY MEDIUM GRAINED SLIGHTLY WEATHEED BIOTITE GNEISS			21.60	75%	25%		
BOREHOLE TERMINATED AT DEPTH OF 22.00m.			22	C	r		
			23				
			24				
			25				
			26				
			27				
			28				
			29				
			30				
SPT : Where full 0.3 m penetration has not been achieved the number of blows for the quoted penetration is given (not N-value) Depths : All depths and reduced levels in meter. GWL : Ground Water Level observed inside the Borehole, after the saturation.	Sample Key / Test Key D - Disturbed Sample B - Bulk Sample W - Water Sample WS - Wash Sample UD - Undisturbed Sample - Position (P) Tube (u)			S - Standard Penetration Test (SPT) V - Vane Test C - Core Recovery (CR), % r - Rock Quality Designation (RQD) % HB - Hammer Bounce FD - Free Down		Remarks: Existing Ground level taken as Zero.	Logged By : R.M.W.K.Rathnayake Supervised By: Randil Asiri Drilled By: K. A.Somasiri Scale 1:50 Fig.

6-2 Laboratory Test Result

1) Summary of Laboratory Test

The design study on the project for reconstruction of Manmpitiya Bridge
Oriental Consultants Co. Ltd.

Job ref: ELS/1703

Client Ref:

Date: 30.07.2004

Depth of Sample MSL (m)	Soil Description	Unified Soil Class	Atterberg Limit			Grain Size Analysis			NMC %	Specific gravity	UCT Rock N/mm2	UUT soil q_u kPa	CBR	Density g/cm^3
			LL %	PL %	PI %	Fines < 0.075 %	Sand 2.00-0.075 %	Gravel >2.0mm %						
0.0-0.50													4.1	
0.5-1.0	Clayey sand	SC	52	44	8	46.90	53.10	0.00	3.72	2.38	-	-	13.25	
0.0-0.5													7.7	
0.5-1.0			28	21	7	-	-	-			-	-	9.6	
0.0-0.5													6.8	
0.5-1.0	Clayey sand	SC	31	20	11	47.23	45.81	6.96	7.88	2.61	-	-	6.1	
0.0-0.5													45.4	
0.0-0.5			54	38	16	-	-	-			-	-	27.1	
-	Poorly graded sand with silt	SP-SM				0.71	91.86	7.43	3.00	2.66	-	-	9.4	
-	Poorly graded sand with silt	SP-SM				2.72	89.60	7.68	3.20	2.65	-	-	-	
0.0-0.5	Silty sand	SM	NP	NP	NP	44.95	54.83	0.22	9.19	2.19	-	-	6.1	
0.5-1.0	Silty sand	SM	NP	NP	NP	42.47	57.36	0.17	6.94	2.04	-	-	14.5	
0.0-0.5	Silty sand	SM	NP	NP	NP	44.82	54.71	0.47	7.61	2.10	-	-	5.8	
0.5-1.0	Silty sand	SM	NP	NP	NP	45.59	54.36	0.05	8.03	2.16	-	-	11.65	
0.0-0.5	Silty sand	SM	NP	NP	NP	36.71	63.04	0.25	7.82	2.29	-	-	9.7	
0.5-1.0	Silty sand	SM	NP	NP	NP	32.57	64.69	2.74	9.31	2.21	-	-	42.25	
0.0-0.5	Sandy silt	ML	NP	NP	NP	52.00	47.68	0.32	6.41	2.19	-	-	4.9	
0.5-1.0	Silty sand	SM	NP	NP	NP	44.12	55.81	0.07	3.64	2.08	-	-	16.4	
22.95-23.10											23.790			
24.95-25.10											6.320			
17.03-17.35											76.810			
16.10-16.32											70.100			
4.10-4.20												74.40		1.865
4.33-4.44												52.58		1.889
20.30-20.40											44.51			

* NP - Non Plastic

2) Sample Data of Atterberg Limit

LIQUID LIMIT AND PLASTIC LIMIT OF SOIL							
BS 1377:PART 2:1990							
Client	Oriental Consultants co . Ltd	Job ref.	ELS/1703				
Project.:	The Desing Study on the Project for Reconstruction of Manampitiya Bridge						
Location:	Borrow pit 1-TP2	Depth. (M)	0.0-0.5				
		Date	25/07/04				
Soil Description:							
Test Method	ASTM - D 4318						
Liquid Limit		Plastic Limit					
Test No.	1	2	3	4	1	2	Average
Number of Blows	47	38	23	16	 	 	
Can No.	N	J	X	C	R	M	
Weight of Can + Wet Soil	g 39.37	34.10	28.58	37.38	26.65	29.14	
Weight of Can + Dry Soil	g 36.30	31.40	26.30	34.50	25.50	28.00	
Weight of Can	g 24.15	21.25	18.34	24.70	19.93	22.53	
Weight of Water	g 3.070	2.700	2.280	2.880	1.150	1.140	
Weight of Dry Soil	g 12.15	10.15	7.96	9.80	5.57	5.47	
Moisture Content	% 25.3	26.6	28.6	29.4	20.6	20.8	20.7

Liquid Limit Graph

Liquid Limit	28	Plastic Limit	21	Plasticity Index	7
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3) Sample Data of Natural Moisture Content

NATURAL MOISTURE CONTENT							
Client	Oriental Consultants co . Ltd				Job ref :	ELS/1703	
Project	The Design Study on the Project for Reconstruction of Manampitiya Bridge				Sample		
Consultant					Date of report	25/07/04	
Location	Manampitiya						
Depth (m)	Barrow 1						
	TP1-0.5-1.0 m						
Can No	E - 2						
Can + wetsoil	316.70						
Can + Drysoil	307.31						
Weight of Can	55.14						
Weight of Water	9.39						
Weight of drysoil	252.17						
Moisture Content %	3.72						

4) Sample Data of Specified Gravity

SPECIFIC GRAVITY OF SOIL					
Client :	Oriental Consultants Co . Ltd	Job ref :	ELS/1703		
Project :	The Design Study on the Project for Reconstruction of	Depth	0.5-1.0m		
	Manampitiya Bridge				
Location	Borrow Pit -1	Date of report	25/07/04		
Location		Barrow - 1 TP1-0.5-1.0 m			
Specific Gravity Bottle No		P			
Weight of Empty Bottle	g	22.47			
Weight of Dry Soil	g	22.22			
Weight of Bottle + Soil + Water	g	87.73			
Weight of Bottle Full Water	g	74.83			
Temperature of water	°C	29.00			
Volume of Sample	cm ³	9.32			
Specific Gravity of Soil		2.38			
Remarks					

5) Sample Data of CBR Test

CALIFORNIA BEARING RATIO																		
Client: Oriental Consultants Co.Ltd			Job ref.	ELS/1703														
Project.: The Design Study on the Project for Reconstruction of Manampitiya Bridge			Client ref.	-														
			Sample No.	-														
Test Method BS 1377 Part 4			Date	28/07/04														
Soil description: Barrow 1 TP1 (0.5 - 1.0)																		
Maximum Dry Density		2.024 g/cm ³	Optimum Moisture Content	12.3 %														
Sample Preparation			Soaking															
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Weight of Mould + sample</td><td>10955</td></tr> <tr><td>Weight of Mould</td><td>6125</td></tr> <tr><td>Weight of soil</td><td>4830</td></tr> <tr><td>Volume of mould</td><td>2170.00</td></tr> <tr><td>Bulk Density</td><td>2.226</td></tr> <tr><td>Moisture content</td><td>13.70</td></tr> <tr><td>Dry density</td><td>1.958</td></tr> </table>		Weight of Mould + sample	10955	Weight of Mould	6125	Weight of soil	4830	Volume of mould	2170.00	Bulk Density	2.226	Moisture content	13.70	Dry density	1.958	Soaked 4 days After Test Moisture Content 11.3		
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			Proving Ring Factor - 0.0101															
Penetration Test																		
Penetration mm	Top		Bottom															
	Dial	Load kN	Dial	Load kN														
0.00	0	0.00	0	0.00														
0.50	50	0.51	54	0.55														
1.00	74	0.75	96	0.97														
1.50	98	0.99	126	1.28														
2.00	120	1.22	144	1.46														
2.50	138	1.40	166	1.68														
3.00	160	1.62	190	1.93														
3.50	180	1.83	212	2.15														
4.00	200	2.03	232	2.35														
4.50	222	2.25	258	2.62														
5.00	240	2.43	282	2.86														
5.50	258	2.62	302	3.06														
Results																		
	CBR %																	
Penetration	Top	Bottom																
2.5 mm	10.6	12.8																
5.0 mm	12.2	14.3																

Penetration	Top	Bottom
2.5 mm	10.6	12.8
5.0 mm	12.2	14.3

Penetration Vs Load

The graph plots Load in kN (Y-axis, 0.0 to 3.5) against Penetration in mm (X-axis, 0 to 6). Two data series are shown: Top (dial) and Bottom (load). Both series show a non-linear increasing relationship between load and penetration, with the Bottom sample consistently showing higher load for the same penetration compared to the Top sample.

Penetration (mm)	Top Load (kN)	Bottom Load (kN)
0.00	0.00	0.00
0.50	0.51	0.55
1.00	0.75	0.97
1.50	0.99	1.28
2.00	1.22	1.46
2.50	1.40	1.68
3.00	1.62	1.93
3.50	1.83	2.15
4.00	2.03	2.35
4.50	2.25	2.62
5.00	2.43	2.86
5.50	2.62	3.06