

**Ministry of Public Works (MPW)
The Democratic Republic of Timor-Leste**

**The Project for the Capacity Development of
Road Works in
The Democratic Republic of Timor-Leste**

Final Report (4th Year)

October 2014

**Japan International Cooperation Agency
(JICA)**

Nippon Koei Co., Ltd

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**Ministry of Public Works (MPW)
The Democratic Republic of Timor-Leste**

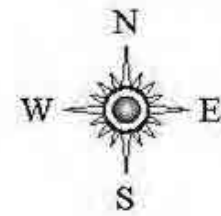
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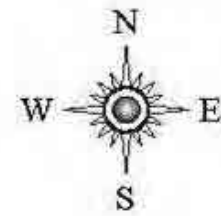
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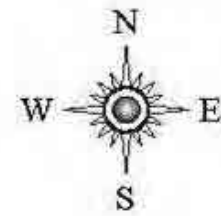
Location Map (Timor-Leste)



Map No. 4117 Rev. 5 UNITED NATIONS January 2005

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Location Map (Timor-Leste)

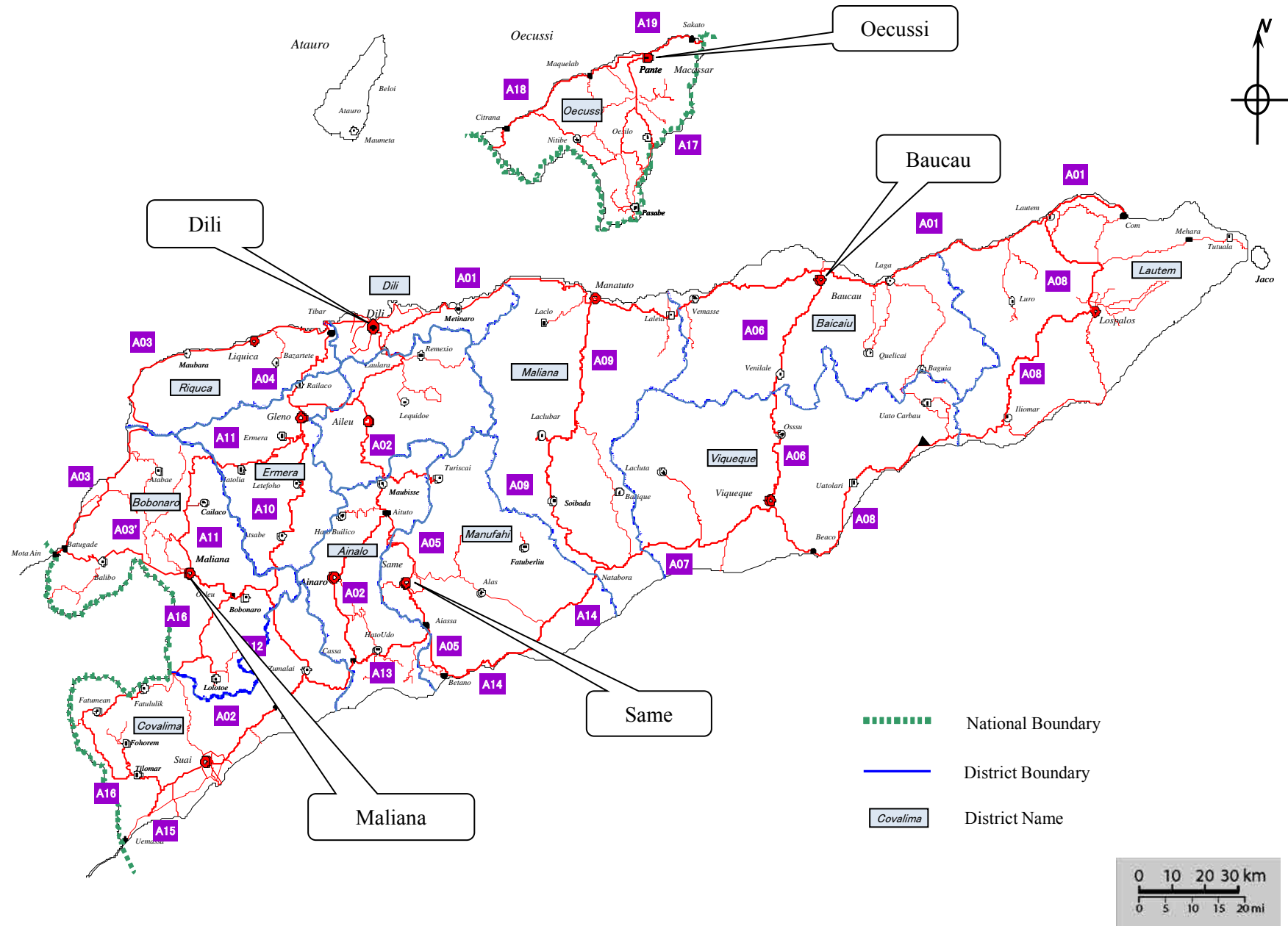


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Departamento de Operações Cartográficas

Location Map (Timor-Leste)

Arterial (National) Roads in Timor-Leste



**THE CAPACITY DEVELOPMENT OF ROAD WORKS [4TH YEAR]
FINAL REPORT (4TH YEAR) ; PHOTOGRAPHS (1 / 4)**

【Enhance the Bridge Resister Database (Budgeting for Repair and Maintenance Works)】



JICA Expert instruct how to analyze the Bridge data Counter parts (July 2014)



Discussion of Bridge database between Counterparts (July 2014)



Counterpart instruct how to analyze the Bridge data the other Counter parts (July 2014)



Discussion of bridge database between Counterparts 2 (July 2014)



Site Training to C/P how to survey for Updated Bridger Register Database(Seo.2014)



Site Training to C/P how to survey for Updated Bridger Register Database(Seo.2014)

**THE CAPACITY DEVELOPMENT OF ROAD WORKS [4TH YEAR]
FINAL REPORT (4TH YEAR) ; PHOTOGRAPHS (2 / 4)**

【Handover Ceremony】



Arrival of Truck with Crane (5 Nos.) at DRBFC Yard from Dili Port (Sep.04, 2014)



Participants for Handover Ceremony on Sep. 05 (more than 60 participants)



Signing of Handover Note between the Minister of MPW and JICA Chief Representative



Explanation of the Equipment to the Minister of MPW (Outside)



Demonstration of Truck with Crane at Outside



Interview from TV Timor Reporter (Broadcasting on TV news on Sep 05 Evening News)

**THE CAPACITY DEVELOPMENT OF ROAD WORKS [4TH YEAR]
FINAL REPORT (4TH YEAR) ; PHOTOGRAPHS (3 / 4)**

【Training and Instruction on Proper Use of the Equipment】



Indoor Explanation of handling of the Equipment by the Maker (Aug. 2014)



Outdoor Training for the Equipment by the Maker (Aug. 2014)



Training for Handling of the Supplied Survey Equipment (Leveling Instrument) (Aug.2014)



Explanation for Handling of the Supplied Survey Equipment (Total Station) (Aug.2014)



Indoor Explanation of the Total Station how to survey and how to handle (Aug. 2014)



Outside Actual Training of Total Station (Sep. 2014)

**THE CAPACITY DEVELOPMENT OF ROAD WORKS [4TH YEAR]
FINAL REPORT (4TH YEAR) ; PHOTOGRAPHS (4 / 4)**

【Training and Instruction on Proper Use of the Equipment】



Training for Loading and Unloading of the Equipment to the Truck with Crane (Sep. 2014)



Actual Repairing Training for Pot hall on the Road (Sep. 2014)

【Promotion of Effects for Overall Program through Sharing Project Achievements】



No.1 Technical Working Group Meeting how to Update the Bridger Register Database(Jul.04, 2014)



No.2 Technical Working Group Meeting as to Activities and Results for CDRW-4 (Sep.18, 2014)



Participants for No.2 Technical Working Group Meeting, Explanation of the Supplied Equipment



Joint Coordinating Committee Meeting as to Results of CDRW-4 and Recommendations (Sep.30, 2014, More than 20 Participants)

*The Project for the Capacity Development of
Road Works in the Democratic Republic of Timor-Leste*

Final Report (4th Year)

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Abbreviation

Abbreviation	Meaning
ADB	Asian Development Bank
ADN	National Development Agency
CADEFEST	Project for Capacity Development for the Faculty of Engineering, Science and Technology, UNTL
CBRM	The Project for the Capacity Building of Road Maintenance in the Democratic Republic of Timor-Leste
CDRW	The Project for the Capacity Development of Road Works in the Democratic Republic of Timor-Leste
C/P	Counterpart Person
DG	Director General
DIT	Dili Institute of Technology
DRBFC	Directorate of Road, Bridge and Flood Control
DRD	Directorate of Research and Development
EOJ	Embassy of Japan
FY	Fiscal Year
GOT	Government of Timor-Leste
GOJ	Government of Japan
IGE	Public Institute of Equipment Management
JICA	Japan International Cooperation Agency
JCC	Joint Coordinating Committee
JFY	Japanese Fiscal Year
M/M	Men – Months
MOI	Ministry of Infrastructure (former Ministry)
MPW	Ministry of Public Works (present Ministry)
MTC	Ministry of Transport and Communication (present Ministry)
MTCPW	Ministry of Transport, Communication and Public Works (old Ministry)
OJT	On the Job Training
PDM	Project Design Matrix
PKO	Peace Keeping Operation
PW	Public Works, MOI (former Ministry)
R/D	Record of Discussions between JICA and MOI for CDRW
T/A	Technical Assistance
TEC	Transport, Equipment and Communications, MOI (former Ministry)
TOR	Term of Reference
TWG	Technical Working Group
UNTL	National University of Timor Lorosa'e

CHAPTER 1

Introduction

Chapter 1 Introduction

1.1 Preface

This is the Final Report for the Capacity Development of Road Works (CDRW), 4th Year, in the Democratic Republic of Timor-Leste (hereinafter referred to as “the Project”) based on the Record of Discussions signed between Japan International Cooperation Agency (JICA) and Ministry of Public Works (“MPW”, present Ministry, former one is Ministry of Infrastructure “MOI”), the Government of the Democratic Republic of Timor-Leste (hereinafter referred to as “Timor-Leste”) on November 03, 2009 providing activities and outputs of the Project. The Project has been carried from May 2014 to October 2014.

In Timor-Leste, national election for members of parliament was carried out in July 2012. Based on the election result, the Government Cabinet of Timor-Leste was reshuffled in August 2012. As a result of reshuffling, Ministry of Infrastructure (MOI) was divided into two Ministries such as Ministry of Public Works (MPW) and Ministry of Transportation/Communications (MTC). Directorate of Road, Bridge and Flood Control (DRBFC) and Public Institute of Equipment Management (Instituto Publico Gestao de Equipamentou Material, here in after referred to as IGE) has been both controlled under MPW.

1.2 Project Background

In Timor-Leste, road traffic is only transportation measure except undeveloped traffic by sea. Most important transportation routes are twenty arterial (national) road systems in the country with a total length of about 1,400 km. However, the road system is often damaged by natural disasters like heavy rain, land sliding and flood, etc. Then, traffic transportation is stopped by these damages. These damages cause the economical damages in the country and the difficulty of access to develop basic human needs of local people like education, health, etc. Important roles of activities of MPW are a road maintenance work to prevent heavy damages, which should be conducted by daily/periodic inspection and repair works and quick/proper actions to recover the damaged portions by disasters.

The Government of Timor-Leste has promoted the maintenance and improvement of the road system with National Development Plan since national independent of the year of 2002. It was mentioned in National Development Priorities prepared in 2010 for development priorities to be road works and water resources development. Road maintenance, rehabilitation and improvement works have been still continuously priority ones in the country.

In the above circumstances, the Project for the Capacity Building of Road Maintenance in the Republic of Timor-Leste (CBRM) was implemented for technical cooperation by JICA from July 2005 to March 2008. CBRM prepared “Road Maintenance Data Base”, “Road Maintenance Manual” and “Reporting Manual for Road Maintenance”, etc. in DRBFC and “Equipment Management Data Base” and Training of Operators and Mechanics in IGE. Moreover, the Project for the Capacity Development of Road Works (CDRW) from the 1st to the 3rd year was implemented from July 2010 to March 2013. In this project, instructions on the road maintenance database, along with technical guidance through case studies, have been conducted for DRBFC. Furthermore, instructions on maintenance of the equipments based on the Equipment Management Data Base have been conducted for IGE.

The CDRW activities have enabled DRBFC to select and budget for places that need maintenances and repairs, based on the road maintenance database. Also, the activities have enabled DRBFC 1) to instruct production of the road and bridge database and 2) to identify entire bridges on the national roads in Timor-Leste.

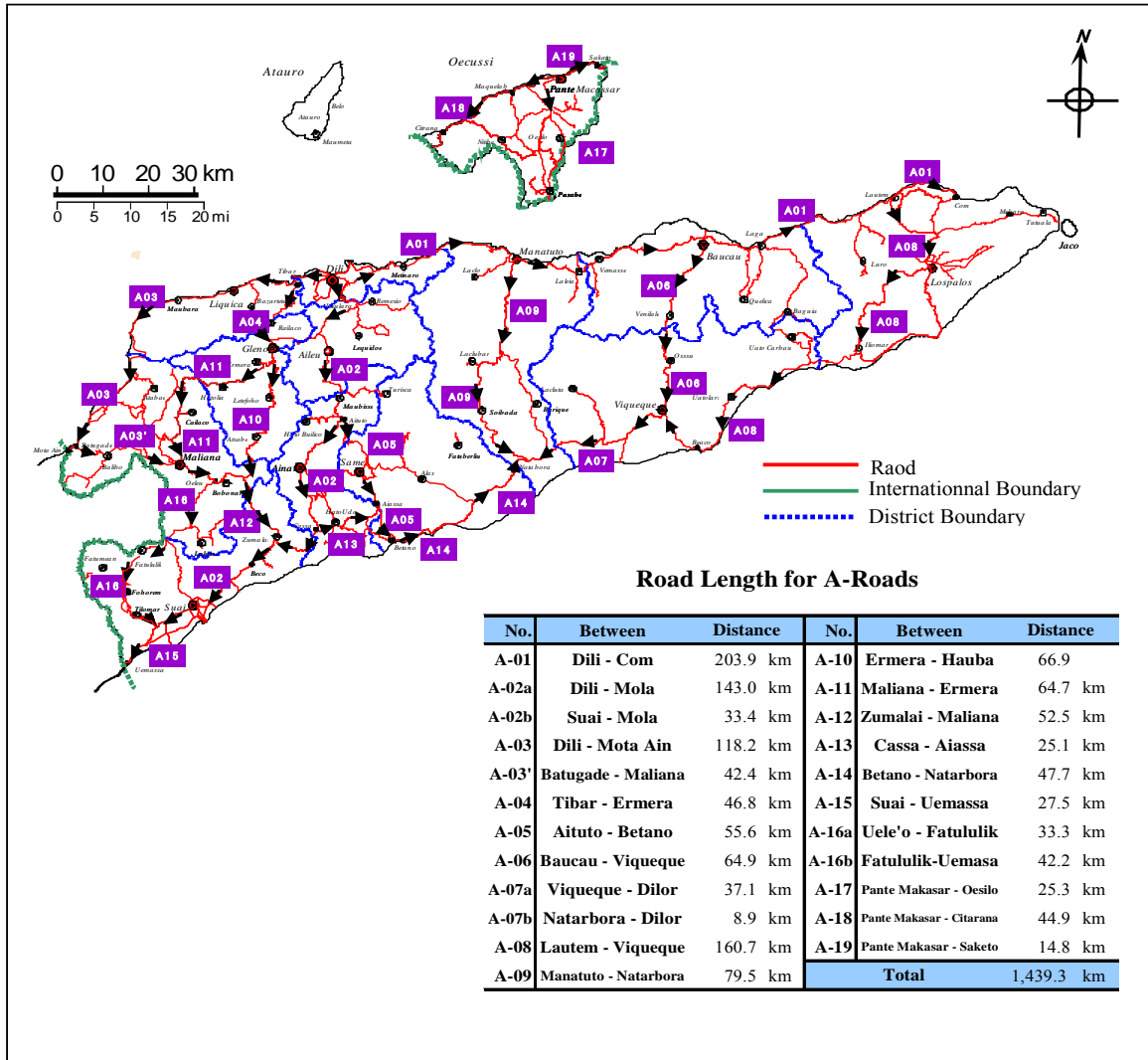
However, bridges in need of repair have not been sorted out or budgeted for based on the Bridge Resister Database. As serious damages of a bridge on a national road directly lead to roadblocks, bridge maintenance requires organized budgeting and plans for repair with much caution. Additionally, in terms of road maintenance, the system of daily inspection or immediate simple repairs hasn't been established yet. It has been decided that JICA provide Timor-Leste with maintenance and repair equipment for routine maintenance works, which demands instructions, training on the usage and handling.

1.3 Overview of the Roads in Timor-Leste

Timor-Leste consists of the eastern half of Timor Island, the Oecussi which is a part of the province of Nusa Tenggara, Indonesia, and the nearby islands. There are mountains in the center of the island lying east and west, which create steep mountainous areas with the mountain almost 3,000 m above sea level. At the bottom of the mountainous areas, precipitous rivers run north and south and form deep valleys.

Under these topographical constraints, the road network in the country consists of main roads that run the comparatively flat coasts in the south and the north, and mountain roads that connect those main roads across the island. The main roads in the northern part are paved with asphalt macadam, and maintained relatively well. On the other hand, the mountain roads are vulnerable to landslides and shoulder collapses due to heavy rain during the rainy season, and then, affected roads are blocked quite often.

In Timor-Leste, 20 roads that connect the major cities are categorized as A-class roads (National roads). The total distance of the national roads is almost 1,400 km, and roughly 6,000 km including the local roads (provincial road and rural road).



Source : CDRW Data

Figure 1.3.1 National Road in Timor-Leste

1.4 Outline of Road Service in Timor-Leste

MPW exercises jurisdiction over social infrastructure in Timor-Leste. DRBFC belonging to MPW is a managing agency for all roads in Timor-Leste. Organization structure of MPW and DRBFC are shown in the next Figures, respectively.

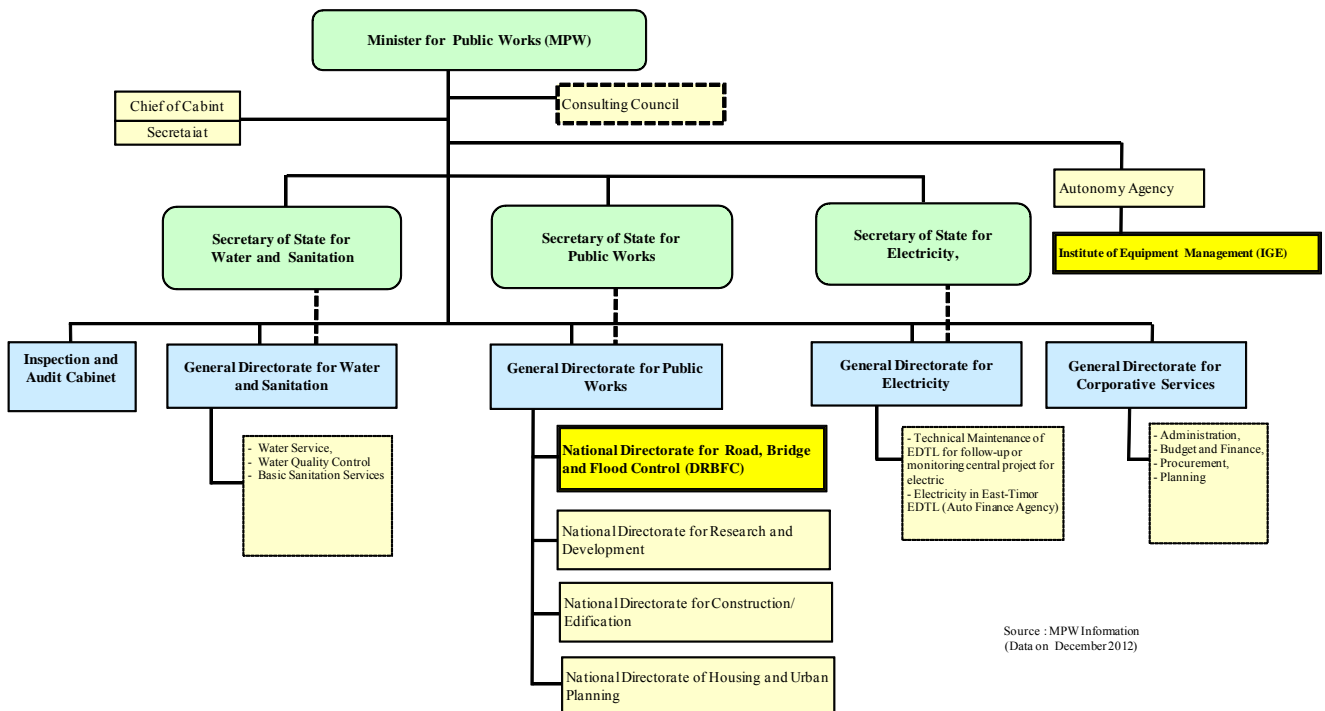


Figure 1.4.1 Organization Structure of MPW

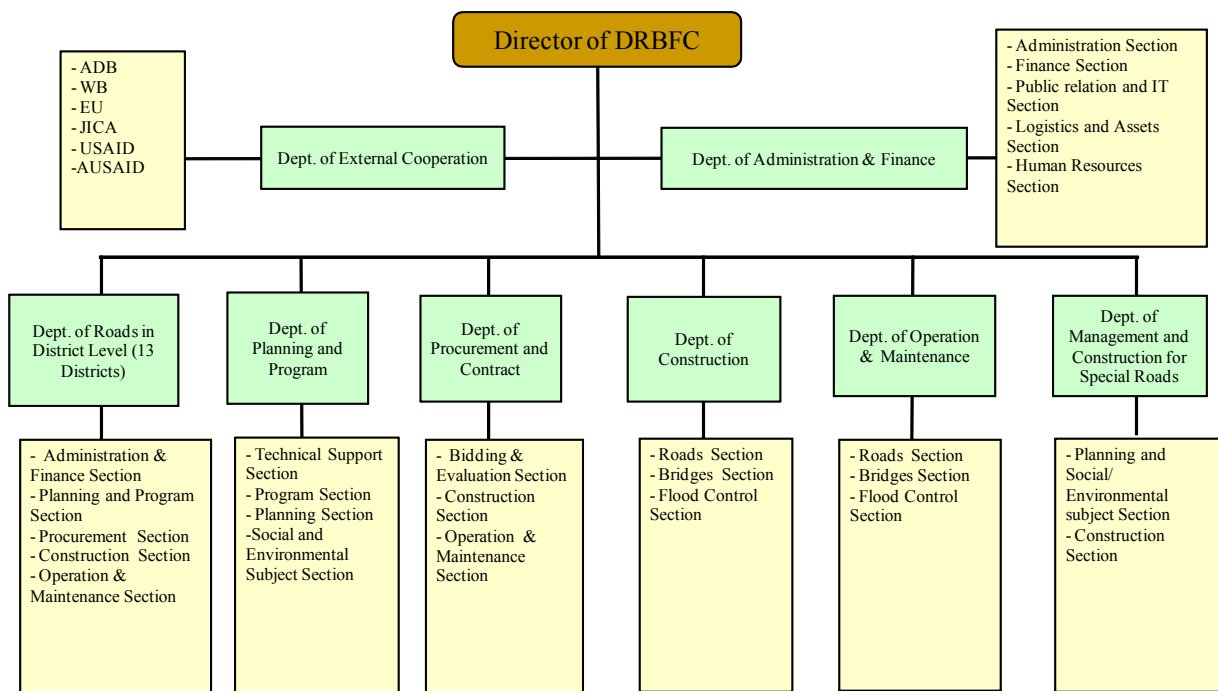


Figure 1.4.2 Organization Structure of DRBFC

As of December 2012, the number of DRBFC staffs that conducts road maintenance, including drivers and other staff, is 57 (counting 17 engineers) at the central office of DRBFC, and total 167 (counting 56 engineers) at 5 regional road offices.

1.5 Overview of Previous Achievements implemented in CDRW (1st – 3rd Year)

1.5.1 Outline of project activity (1st - 3rd year)

The Project from the 1st to the 3rd year was implemented from July 2010 to March 2013. The outline of Project Activity is shown below:

Table 1.5.1 Outline of Project Activity(1st - 3rd year)

Name of the Project:	The Project for the Capacity Development of Road Works in the Democratic Republic of Timor-Leste
Recipient country:	The Democratic Republic of Timor-Leste
Counterpart organizations:	Ministry of Public Works (MPW): Directorate of Road, Bridge and Flood Control (DRBFC); Public Institute of Equipment Management (IGE)
Operation system :	<p>Project Director : Minister of MPW</p> <p>Deputy Project Director : Secretary of State for Public Works, MPW</p> <p>Project Manager : Director General, Public Works, MPW</p> <p>Joint Coordinating Committee : (Timor-Leste Side); Minister of MPW, Secretary of State for Public Works, Director General (DG) for Public Works, Representative(s) of General Directorate for Corporate Services, MPW, Coordinator Aid Effectiveness and National Priority Secretariat, MOF, Director of DRBFC, Director of IGE, Representatives from Counterparts personnel from DRBFC, Representatives from Counterparts from IGE, Other Person(s) or agency(s) concerned to be selected by the Chairperson (Minister) (Japanese Side) JICA Experts of the Project, Chief Representative of JICA Timor-Leste Office, Any other persons(s) or agency(s) recommended by JICA TL Office, Officials of the Embassy of Japan may attend the meeting as observer(s) when necessary, JICA Headquarters when necessary</p> <p>Technical Working Group : (Timor-Leste Side) Project Manager: DG for Public Works, MPW, Directors of DRBFC and IGE; Any other persons when required (Japanese Side) JICA Expert Team for the Project (CDRW)</p>
Implementing period:	July 1, 2010 to February 10, 2013 (1st Year to 3rd Year), Record of Discussions for the Project (R/D) signed Date: November 3, 2009

Program:	JICA Technical Cooperation Project
Other relevant cooperation by JICA:	<ul style="list-style-type: none"> - The Preparatory Survey on Road Network Development Sector Project in the Democratic Republic of Timor-Leste (August 2010 to December 2010), - The Project for Construction of Mola Bridge (January 2010 to August 2011), - Timor-Lest–Indonesia South to South Technical Cooperation Project (December 2010 to November 2014), - The Project for Capacity Development for the Faculty of Engineering, Science and Technology, UNTL (February 2011 to January 2014) - Japanese Assistance on Strengthening Institutional Capacity of National Development Agency (ADN) in Democratic Republic of Timor-Leste

Source: CDRW Final Report (the 3rd year)

1.5.2 Overview of project achievement (1st - 3rd year)

The overview of project achievement is shown below:

Table 1.5.2 Overview of Project Achievement (1st - 3rd year)

Narrative Summary (PDM)	Objectively Verifiable Indicators (PDM)	Summary of Achievements through the Project activity	Important Assumptions (PDM)
<p><u>Project Purpose:</u></p> <p>Technology and management capacity on road works by the Timorese (DRBFC&IGE) have been enhanced.</p>	<ol style="list-style-type: none"> 1. Actual update of the "Database for Road maintenance 2. Actual Inspection & evaluation 3. Actual road maintenance and repair works 4. Actual road restoration works 5. Quality of maintained roads 	<ul style="list-style-type: none"> - <i>The road maintenance database was reformed more easy to use. The road condition survey and input the data to the database were executed by DRBFC staff with orientation and leading under CDRW.</i> - <i>Inspection & evaluation of national roads had not been executed systematically by DRBFC. CDRW assisted DRBFC to do inspection & evaluation work for national roads through utilizing road maintenance database.</i> - <i>And, road defect places pointed out in the previous year as the place to be required urgent repairing works was surveyed through the DB work and input it to DB.</i> - <i>Condition of road maintenance, management and restoration works by DRBFC was not fit urgent restoration works for serious damaged portions due to many damaged places by disaster in Timor-Leste against the staff numbers and capability of DRBFC. Therefore, CDRW assisted to implement road maintenance and restoration works step by step based on the road maintenance database and maintenance plan. It looks that many places on restoration works has being clearly carried out step by step.</i> - <i>Urgent repairing works have been done by respective regional offices in cooperation with the central office of DRBFC. When road traffic was blocked by disaster, IGE equipment was fully used. Firstly temporary recovering works have been done</i> 	<p>The government budget for road maintenance and management is constantly allocated.</p> <p>The volume of vehicle traffic does not increase suddenly over the prospect.</p>

	6. Condition of equipment	<ul style="list-style-type: none"> - As for the quality of restoration works, temporary works were done against the disaster places. However, countermeasure works against causes of damages did not executed, then, there were many places which damaged again by disasters. - Road bridge register database on national roads was prepared with site inspection and data input by DRBFC staff leading by CDRW, since there wasn't any database for bridges in Timor-Leste. - The database of IGE equipment was updated, and CDRW supported it so as to manage the equipment on the basis of this database. - IGE Equipment has been mainly used as to repair and maintenance works at district and rural roads. 	
Achievement- 1			
Road maintenance is timely and properly managed by DRBFC.	<p>1-1. Actual update of the "Database for Road maintenance</p> <p>1-2. Actual road repair and recovery works</p> <p>1-3. Proper procedure of emergency works</p> <p>1-4. Proper budget planning/ management for road maintenance</p>	<ul style="list-style-type: none"> - Road condition survey for updating of the data base for national roads were conducted by DRBFC staffs leading by CDRW after last rainy season. However, the work progress was not well due to many obstacles on the works, which do include in-timely arrangement of car and unsuitable mechanism of allowance for survey staffs as the same situation every year. But progress itself of road survey was improved and inspection was completed within 1.5 months at 2nd Year, 3 week at 3rd Year against 5 months in 1st Year. The performance of road database staffs was improved, because i) road survey work was done by same staffs and ii) procedure of car arrangement and site allowance became clear. After 3rd Year, Two semi-full-time DRBFC staff was assigned to the CDRW office at the beginning of 3rd Year. They led and supported the Project. As a result, the group (DRBFC staff) became able to independently carry out not only on road inspections and evaluations, but also a series of activities including office reorganization and detailed data storage and management in small steps. - As for the emergency cases to damaged sites, regional and central offices have made countermeasures for them with temporary method at almost all cases. CDRW proposed the countermeasure against the Loes-bridge, which was inclined the No.5 Pier due to flood, according to the request from MOI. - Road Damage sites were monitored with Database and evaluated using the Ratio of Damage/Repair sites. - CDRW assisted preparation of budget planning with considering of priority, necessity of works based on updated database results aiming to develop DRBFC capability regarding maintenance works and budget planning. The DRBFC staffs lacked the knowledge to budget effectively when CDRW staff took the initiative to draw up until the 2nd fiscal year's budget. However, in 3rd Year, the DRBFC staffs was able to plan the budget independently, after learning to use the checklist repeatedly and becoming familiar with several useful Excel functions. The two process (as below) introduced into budgetary planning improved the quality dramatically. 	<p>Officers (counterparts) of DRBFC and IGE trained in the Project continue their services at their own agencies (they do not quit in the middle of project).</p> <p>Current function and role of IGE are maintained.</p> <p>Borrowers (user client) return the machines/ equipment/ tools to IGE after use as contracted</p>

		<p><i>i) Training on checking the budget based on the scale of the budget (over \$200,000/site repair budget).</i></p> <p><i>ii) Training on checking based on printing out and reviewing the summary table of the results of expense calculations</i></p> <ul style="list-style-type: none"> - <i>Basic maintenance such as regular patrols, monthly cleaning, gutter clearing, and weed removal are vital. However, currently these are not mostly performed by DRBFC. But now DRBFC staff, and in particular those from the regional road offices, have come to realize the importance of regular inspections due to the explanation of the importance repeatedly.</i> - <i>The degree of familiarity with the processes associated with the activities of CDRW was assessed using the questionnaire. CDRW evaluated the how much they understand and execute independently.</i> - <i>Every data was organized and backed up to prepare for the Project, there is less data lost and staff within DRBFC is able to share data easily.</i> - <i>CDRW prepared and submitted to MPW/ DRBFC up-dated maintenance/ repair plan through updated database result which indicated numbers of damage place and costs.</i> 	
<p>Achievement-2</p> <p>Construction works (including maintenance/ repair) are conducted with enough quality by DRBFC.</p>	<p>2-1. Preparation of construction plan</p> <p>2-2. Proper construction management (progress control, quality control, safety control and cost management)</p> <p>2-3. Quality of improved and repaired roads</p>	<ul style="list-style-type: none"> - <i>CDRW and DRBFC/MOI agreed in 1st Year to improve A01 at km6.7, Fatuahi, where had landslide in every year, as the Case Study work of CDRW.</i> - <i>The landslides were occurred whole area in Timor Leste since 20-30 years, this disaster pointed out for big problems.</i> - <i>The restoration of this area took up for “the Case Study work” to contribute improvement of civil engineering and project management knowledge of DRBFC engineers.</i> - <i>Improved road by the Case Study work is expected that this is one of good example for safety road.</i> - <i>The basic plan/ preliminary design conducted in 1st Year by OJT reported DRBFC and related agency through seminar.</i> - <i>Phase I works of the Case Study started September 12, 2011 after preparatory works.</i> - <i>Construction management plan was prepared and text book also prepared based on for training purpose to DRBFC staffs and DRD engineers and improvement of engineering, management.</i> - <i>This construction management plan applied actual problems and subject to solve on the construction works</i> - <i>The management of construction plan evaluated at the end of 2nd Field Work and reported to DRBFC and related agency through seminar. Case Study report was prepared and submitted to DRBFC, DRD and MPW.</i> - <i>Three (3) times seminar conducted to young DRBFC engineer by the supervisor who had supervised Phase-I works.</i> 	<p>Borrowers (user client) properly and safely operate the machines/ equipment/tools of IGE so that un-repair-able breakage or damage does not often happen by wrong use.</p> <p>Unforeseen natural calamities which destroy the case-study roads area in the middle of activities do not</p>

		<ul style="list-style-type: none"> - There are big differences value and volume management knowledge in DRBFC staff, therefore, in order to improve this difference, CDRW trained as to value and volume. - Quality control matter was stressed with DRD in 2nd Field Work. During 3rd Field Work period, CDRW concentrated to value and volume management method. - Prepared text book indicated calculation method for works out put, ratio of workable day, works volume per day, per head of worker. CDRW assisted to supervisor to calculate and record these data every occasion. Supervisor could get these data and record during Phase-II works. - Infrastructure work increase near future in Timor lest therefore, technical and management with volume management knowledge were essentially important on young DRBFC engineer. - CDRW assisted initial construction plan include quality control flow for concrete and earthworks. - Case Study works had many variety work items. DRBFC staff acquired technical, project management knowledge through seminars and site inspections. - The final inspection for Phase I works conducted by DRBFC and DRD engineers on December 3, 2012 with DRBFC inspection method. 	<p>happen.</p>
<p>Achievement-3</p> <p>The equipment at IGE is properly maintained.</p>	<p>3-1. Actual update of "Machinery Inventory"</p> <p>3-2. Actual maintenance work of equipment</p> <p>3-3. Actual procurement of spare parts</p> <p>3-4. Number of trainees who acquired specified maintenance technique, and their learning achievement</p> <p>3-5. Proper budget planning/</p>	<ul style="list-style-type: none"> - CDRW carried out to train the staffs selected 12 members in each department. - The equipments management database of IGE was updated 2 times per year with supporting IGE staffs. - Especially, new equipment purchased in 2011 were concentrated to register and input the data base - The inventory of DB is totally counted 347 data, as "old equipment" are 212 data, "New equipment" are 135 data. - The seminar was held to introduce another system as "useful systems in the future". - CDRW supported to make a DAILY INSPECTION SHEET and DAILY INSPECTION MANUAL. - CDRW coached operators to inspect equipments by OJT, totally 74 times. - CDRW guided mechanics to repair equipments by OJT, totally 92 times. - IGE Workshop carried out tasks, as repair works to 268 times, as maintenance works to 325 times for 3 years. - CDRW supported to take inventory at the warehouse. - Discussed with IGE, supplements of spare parts were taken the measure into consideration. - Necessary spare parts, such a tire & tube or filter concerned, were amounted to \$313,000 over in FY2011, \$834,000 over in FY2012. - Mechanics were trained mainly by OJT, a number of mechanics is 21 persons, OJT is 110 times for 3 years. 	

	management for equipment maintenance	<ul style="list-style-type: none"> - Mechanics were evaluated their learning achievements every year. As a result, the score is on average 48 points in the 1st year, 53 points in the 2nd year, 57 points in the 3rd year. - As IGE staff requested to study about electrical or hydraulic matters, CDRW made to go to DIT training school. - Three (3) members of counterparts took part in “JICA group training” held in Japan. It was effective to become aware of importance for equipment management and maintenance. - In 1st Year, CDRW supported to get a budget for equipment operation/maintenance expenses or training expenses for staffs, etc. - In 2nd Year, CDRW supported to get a budget for fuel cost and equipment maintenance expenses and training and spare parts for new equipments. - From now on, IGE budget be required to increase drastically because IGE has a plan to replace to another area. - Though IGE has requested a budget under Ministry of Finance, it has been needed to get an additional budget for every year. 	
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Source: CDRW Final Report (the 3rd year)

1.6 Objectives and Scope of the Project (4th year)

(1) Objectives

The objectives of this operation is to take over the achievements of the project for the Capacity Development of Road Works (CDRW, the 1st–3rd year), to strengthen the road and bridge database that is required for road maintenance and repair and for disaster-relief work on affected roads by DRBFC which is affiliated with MPW (the Ministry of Public Works), and to conduct trainings on use of the maintenance equipment that are provided by JICA.

(2) Goals and achievements

Overall goal	: Smooth traffic is ensured stably and sustainably in Timor-Leste.
Project goal	: Improvement of engineering and management abilities for road constructions (including maintenance) by human recourses in Timor-Leste (DRBFC).
Achievement 1	: Ability to determine the approximate cost of repair using the road and bridge database.
Achievement 2	: Ability to use and maintain the road maintenance equipment provided by JICA independently.
Achievement 3	: Ability to manage the daily maintenance independently using the equipment provided by JICA.

(3) Target area and implementation organizations

Target Area and Implementation Organizations in this project is shown below.

Table 1.6.1 Target Area and Implementation Organizations in this Project

Target Area	: Whole area of Timor-Leste (but, mostly in the area of Dili)
Target Group	
Concerned Ministry	: Ministry of Public Works (MPW)
Counter Part (C/P) Offices	: Directorate of Road, Bridge and Flood Control (DRBFC)
Benefited Officers	: Operation and management Officers of General Directorate of Public Works, MPW : Officers of DRBFC, approx. 56 officers (central and five regional offices, as of December 2012)

1.7 Project Member and Input Record

The objectives of this project are, continuing from CDRW 1st –3rd, to establish the road maintenance system by DRBFC, and to develop human resource for operation of the system. This is the most important commitment to establish the independent road maintenance system in Timor-Leste. In order to provide this technical cooperation successfully, JICA arrange the following specialists who are familiar with the road condition in Timor-Leste. The assignment schedule to implement this project is shown in the following Table.

Table 1.7.1 Project Member and Input Record

1. Timor-Leste			2014												Day Total	M/M Total			
Name	Plan/ Actual	Trip	1	2	3	4	5	6	7	8	9	10	11	12					
1 Koji NAITO (Team Leader / Road Maintenance)	Initial plan	1								(11)	(31)	(20)				62	2.07		
	Change plan	1								(28)	(30)	(5)				63	2.10		
	Actual results	0								8/4	(28)	(30)	(5)	10/6		63	2.10		
2 Nobuyuki KURIHARA (Road Equipment /Instruction of construction)	Initial plan	1								(11)	(31)	(20)				62	2.07		
	Change plan	1								(28)	(30)	(5)				61	2.03		
	Actual results	0								8/4	(28)	(30)	(5)	10/6		61	2.03		
3 Haruhiko Aoyama (Database/ Technical instruction)	Initial plan	2						(30)	(30)	(5)	(20)					85	2.83		
	Change plan	2						(29)	(31)	(2)	(5)	(21)				88	2.93		
	Actual results	2						6/2	(29)	(31)	(2)	(5)	(21)	8/21		88	2.93		
Sub-Total (Timor Leste)												Initial plan	209	6.97					
												Change plan	212	7.06					
												Actual results	212	7.06					
2. Japan			2014												Day Total	M/M Total			
Name	Plan/ Actual	Trip	1	2	3	4	5	6	7	8	9	10	11	12					
1 Koji NAITO (Team Leader / Road Maintenance)	Initial plan	1								(5)		(8)				13	0.65		
	Change plan	1								(2)	(5)	(8)				13	0.65		
	Actual results	0								7/28	(4)	(1)	10/6	(8)	10/13	13	0.65		
3 Haruhiko Aoyama (Database/ Technical instruction)	Initial plan	2						(5)		(5)	(8)					18	0.90		
	Change plan	2						(2)	(1)	(5)	(8)					16	0.80		
	Actual results	2						5/30	(2)	6/1	(1)	8/22	(5)	8/26	(5)	8/22	(8)	8/30	16
Sub-Total (Japan)												Initial plan	31	1.55					
												Change plan	29	1.45					
												Actual results	29	1.45					
Total												Initial plan	8.52						
												Change plan	8.51						
												Actual results	8.51						

Remark:  Plan  Actual result

1.8 Project Implementation Plan and Schedule

The staff of the 4th year CDRW carries out a series of the process of domestic advance preparations, local operation, domestic operation, directions to Timor-Leste counterpart, and development of the final report, starting with the advance preparation in May 2014, for about 5 months from June to October 2014.

The project implementation plan and schedule is shown in the table below, and the following is the summary of each process.

Table 1.8.1 Project Implementation Plan and Schedule

Item	2014											
	1	2	3	4	5	6	7	8	9	10	11	12
Domestic advance preparations												
0-1 Study for project implementation												
Item1 : Overall matter												
1-1 Explanation and discussion of implementation plan												
1-2 Report and summarize the Progress report												
1-3 Report and summarize the Final report												
Item2: Support to enhance the Bridge Resister Database												
2-1 Improve the Bridge Resister Database												
2-2 Conduct the OJT for DRBFC staffs												
Item3: Training and instruction on proper use of the equipments												
3-1 Support for receiving provided machinery to DRBFC												
3-2 Support for handling of provided machinery												
3-3 Training with Provided Machinery on Actual Roads												
Item4: Promotion of the effects for Overall program through Sharing Project Achievements												
4-1 First Technical Working Group Meeting												
4-2 Second Technical Working Group Meeting												
4-3 Hosting of the Joint Coordinating Committee Meeting												

(1) Examination of Execution Plans of Operations: May 2014

Examine policies, methods, and schedule of the entire technical cooperation and develop execution plans of operations.

(2) Overall Matter: June 2014 - October 2014

Explain the execution plans of operations to MPW, DRBFC, and JICA, and obtain their agreement on the activities. Then, report the project progress and summarize the achievements.

(3) Support to enhance the Bridge Resister Database: June 2014–September 2014

Review and improve the bridge register database created and instructed during the 2nd–3rd year CDRW. Additionally, conduct on-the-job training for the DRBFC staffs to fully operate the improved database.

(4) Training and instruction on proper use of the equipment: June 2014 – October 2014

The road repair equipment, which enable DRBFC to repair simple road maintenance works

independently, are brought by JICA from June 2014 to August 2014. The CDRW staffs support DRBFC to receive the equipment, and instruct and train them on the use of the equipment. Also, CDRW instruct DRBFC staffs to repair actual damaged roads using the provided equipment by themselves.

**(5) Promotion of the effects for Overall program through Sharing Project Achievements
July 2014 – October 2014**

Ensure the smooth 4th year CDRW activities, organize the Technical Working Group to advertise the achievements of the Project, and form the Joint Coordinating Committee involving the Timor-Leste Counterparts administrative divisions widely.

1.9 Deliverables of the Project

The followings are the report and others to make as deliverables of the project CDRW 4th year.

Table 1.9.1 Number of the Deliverable

Reports and others	Submission Deadline	Numbers of Copies
1. Progress Report	Approx. in 49 months after the project started. (2 months from the start of the 4 th year) (July 2014)	5 sets in English (including 3 sets for the counterpart) 3 sets in Japanese CD-ROM of the report (in English and Japanese)
2. Project Completion Report for the 4 th year CDRW	On expiry of the contract of the 4 th year (October 2014)	8 sets in English (including 3 sets for the counterpart) 5 sets in Japanese CD-ROM of the report (in English and Japanese)

CHAPTER 2

Project Issues and Basic Policy for its Implementation

Chapter 2 Project Issues and Basic Policy for its Implementation

Based on the background, purpose, and results of existing projects of CDRW's 4th Year as laid out in the previous chapter, first we discuss the issues with this project, and then lay out the basic policies for them.

2.1 Issues

In the 4th Year of CDRW, we take over the results of the 1st through 3rd years, and seek additional development to sort out the following three issues:

(1) Issue 1: Suitable use for the bridge register database

Since no bridge database existed of Timor-Leste's national roads in DRBFC, in the second to third years of CDRW, DRBFC created a bridge register database under the instruction of CDRW. Then we were able to gain an understanding of all of the bridges on national roads in Timor-Leste. In order to use this database effectively in the future, it is vitally important to calculate the approximate repair costs of bridges that require repairs, budget for them, and reliably maintain them.

(2) Issue 2: Suitable use for machinery provided by JICA

In the 4th Year of CDRW, the road management and maintenance machinery that is planned to be provided by JICA is simple road repair machinery and surveying machinery for the purpose of distribution to the local road offices of the DRBFC. It is vitally important that the DRBFC itself conduct daily inspections, and that simple road repairs are made independently and promptly. The machinery must be used suitably, so instruction and training are necessary with regards to the handling and use of the machinery provided.

**(3) Issue 3: Strengthening of Connection to Projects Composing the Program,
and Active Appeal**

Various types of support for the road offices are currently ongoing. Examples include the project to repair and replace the national A01 road funded by loans of Yen from Japan and support from ADB, AusAID, World Bank and the EU. For the implementation of these support activities and this project, it is necessary to be well aware of each other's activities and be connected to avoid redundancy. However, at the current time, we have not proceeded beyond the level of information sharing at the personal level by those in charge. Furthermore, in Timor-Leste, there are many support organizations carrying out many projects. If they do not promote them sufficiently forward to outside, there is a high probability that their results not be acknowledged. Therefore, it is important to actively show off the effectiveness of this program.

2.2 Basic Policy for Implementation

In the 4th Year of CDRW, we show the basic policy for resolving the aforementioned issues, and list the details thereafter. With regard to the strengthening and improvement of staff, it is necessary to take into account the limited number of DRBFC staff and the staff's ability. These projects activities in the 4th Year must take the experiences and training of the third year into consideration when engaging in work. In particular, the key is to plan taking into account the C/P governing ability (Preparation time for funding the site survey, providing for transportation methods, daily maintenance of computers for data entry, as well as office budget allocation and management).

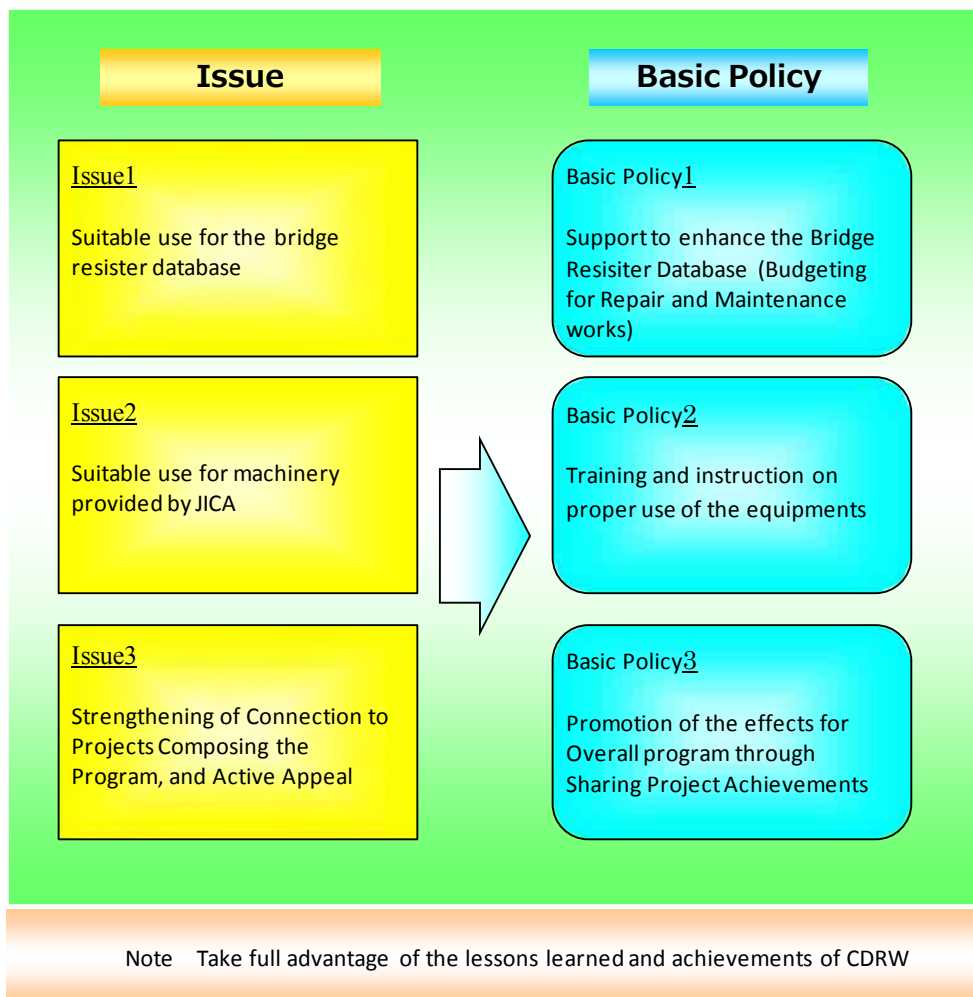


Figure 2.2.1 Project Issues and Basic Policy

(1) Basic Policy 1: Support to enhance the Bridge Resister Database (Budgeting for Repair and Maintenance works)

Just as the repair cost calculated with the road maintenance database, we improve the bridge register database to make it possible to calculate the estimated repair costs, with a simple examination at the level for Timor-Leste's technology. While instructing and training DRBFC staffs in the examination methods on specific roads, we also instruct and train them on the handling of the improved bridge resister database at site.

(2) Basic Policy 2: Training and instruction on proper use of the equipment

We provide instruction for the simple road maintenance work with the machinery provided by JICA. Furthermore, at actual roads, we provide training of practical repair work with that. We also strive to attain an understanding in the MPW and DRBFC of the importance and necessity of daily inspections and repair work.

(3) Basic Policy 3: Promotion of the effects for Overall program through Sharing Project Achievements

We strive for smooth activities in CDRW's 4th year. In order to make the results widely known, we host Technical Working Group Meeting, and set up a Joint Coordinating Committee with the Timor-Leste C/P, Government Organization head as its top.

Furthermore, in this Joint Steering Committee, in order to promote the effects of the program's overall support though sharing the project results, we bring in and connect people related to other road projects in the same country.

CHAPTER 3

Support to Enhance the Bridge Resister Database (Budgeting for Repair and Maintenance Works)

Chapter 3 Support to enhance the Bridge Resister Database (Budgeting for Repair and Maintenance works)

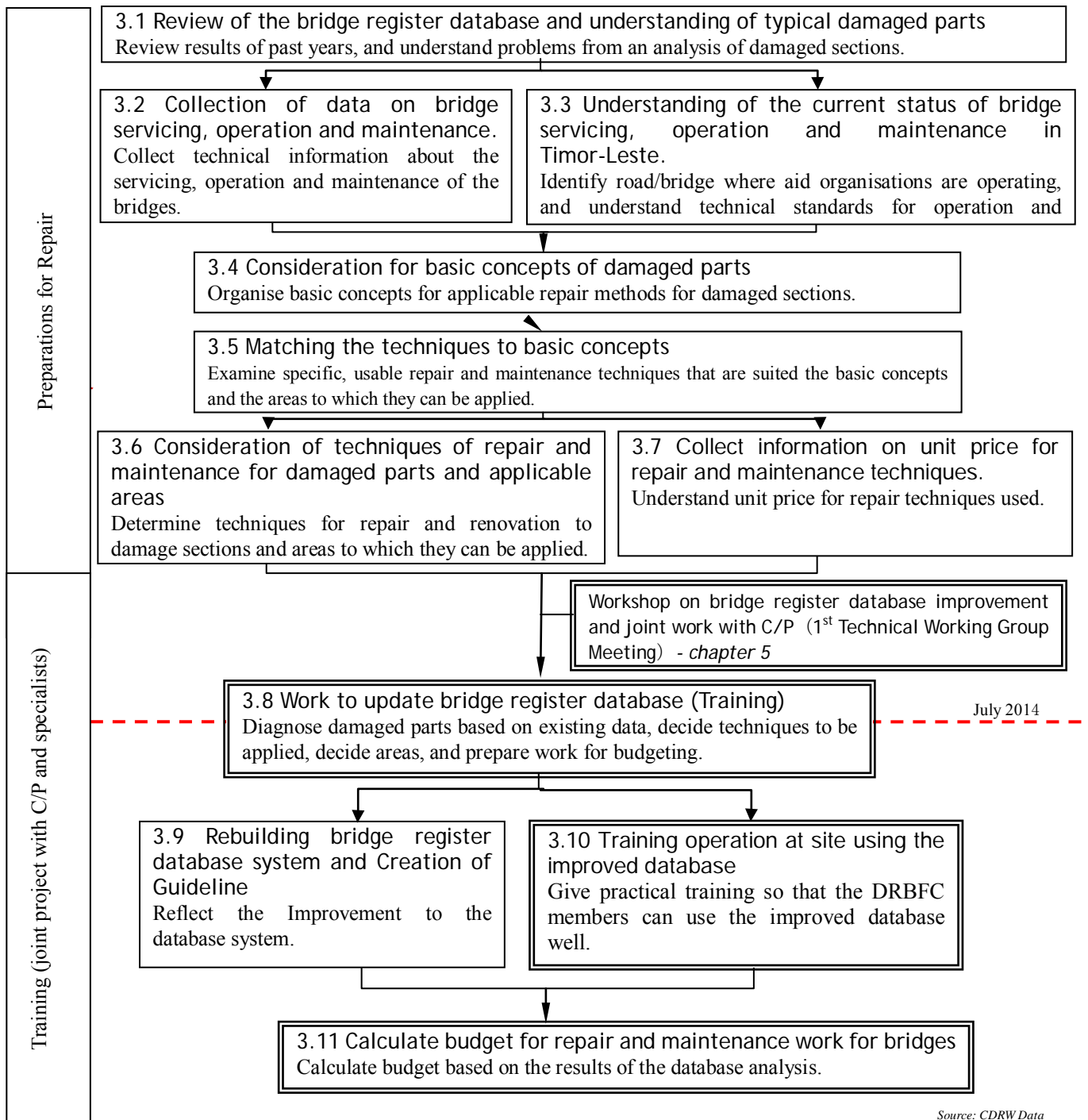
CDRW developed the capacity of 23 DRBFC staffs through this project. Francisco Barbosa Gama, Agostinho de Ataíde da Costa and Antonio de Araujo had special training with CDRW expert with cooperative work to become the key staff of the bridge resister database.

Table 3.1 List of DRBFC staffs who had capacity building training for Bridge Resister Database

No	Name	Position
1	Eng. Joao Pedro Amaral	DRBFC Chief Dili Regional office
2	Eng. Joao M. Gama de Sousa	DRBFC Chief of Section Planning
3	Eng. Abrao Vieira	DRBFC Bridge Engineer
4	Eng. Doningos da Silva Bardosa	DRBFC Principal Design Engineer
5	Eng. Estevao de Carvalho	DRBFC Bridge Engineer
6	Eng. Nelson Maria L.A. de Barris	DRBFC Database staff
7	Francisco Barbosa Gama	Database staff Reg. Dili
8	Julito Pereira	Database staff Reg. Malilana
9	Joaquim da Costa	Database staff Reg. Same
10	Josafina Jusefa Usfinit	DRBFC
11	Luis Sarmiento da Cruz	DRBFC
12	Rogério da Costa Freitas	DRBFC Section Planning
13	Altino Fernandes da Costa	DRBFC – MOP
14	Rui Vicente	DRBFC – MOP
15	Sabino de Jesus Lobato	Database staff Reg. Same
16	Sabino da Costa Ventura	DRBFC Bridge Assistant Engineer
17	Agostinho de Ataíde da Costa	Database staff Reg. Dili
18	Alfredo E. dos Santos	DRBFC - MOP
19	Antonio de Araujo	Database staff Reg. Baucau
20	Letigia Corbafo	DRBFC GIS
21	Marcus Filomeno da Costa	Database staff Reg. Baucau
22	Agus Sukoso	PSU-MOP
23	Camilo da C. de J.K.B.C.C	Database staff Reg. Oecussi

Source: CDRW Data

To perform the basic policy outlined in chapter 2 – add the budgeting function to bridge register database - it is necessary to look at the past results. Then CDRW should grasp the current status of bridge servicing, operation and maintenance in Timor-Leste and work out the method needed to be applied with setting the unit price. Below is an outline of the process; each process be explained in detail thereafter.



Source: CDRW Data

Figure 3.1 Operation Procedure for the Improvement of the Bridge Register database

3.1 Review of the Bridge Register Database and Understanding of Typical Damaged Parts

3.1.1 Outline of CDRW activity of the bridge register database in 2nd – 3rd year

Since there wasn't any bridge data on national roads in Timor-Leste in DRBFC, it was required to arrange the bridge register database on national roads in 2nd Year. As for the making of the Bridge register database in 2nd Year, the existing data, which had been arranged by UNMIT and not been known only its existence in DRBFC, was input to the database. And then, orientations for the bridge register database were held at office and site so as to carry out site survey and input the surveyed data to the database by DRBFC staff themselves.

Site survey and data input were carried out by DRBFC staff on January and February 2012. Results of the database were summarized in "Report on the Bridge Register Database on National Roads in Timor-Leste" and submitted to MPW, DRBFC central and regional offices with software of the Bridge Register Database.

For 3rd Year's CDRW activities, CDRW added data on newly completed bridges discovered during 3rd Year's inspection survey of the Road Maintenance Database. Afterwards, DRBFC staffs revised the bridges' numbering with serial numbers, and updated the 2nd Year's Bridge Register Database. Results of the database was summarized in "Report on the Bridge Register Database on National Roads in Timor-Leste" and submitted to MPW, DRBFC central and regional offices with software of the Bridge Register Database.

3.1.2 Outline of bridge condition of Timor-Leste and representative damage and problem

The outline of bridges on national roads in Timor-Leste is shown in Table below. Total number of bridge is 439 bridges. The ratio of regional office is 23% (Dili:103 bridges), 20%(Baucau:87 bridges), 22%(Same:96 bridges), 26%(Maliana:114 bridges), 9%(Oecussi:39 bridges).

Table 3.1.1 Summary of Bridge Register Database Surveyed in 2012

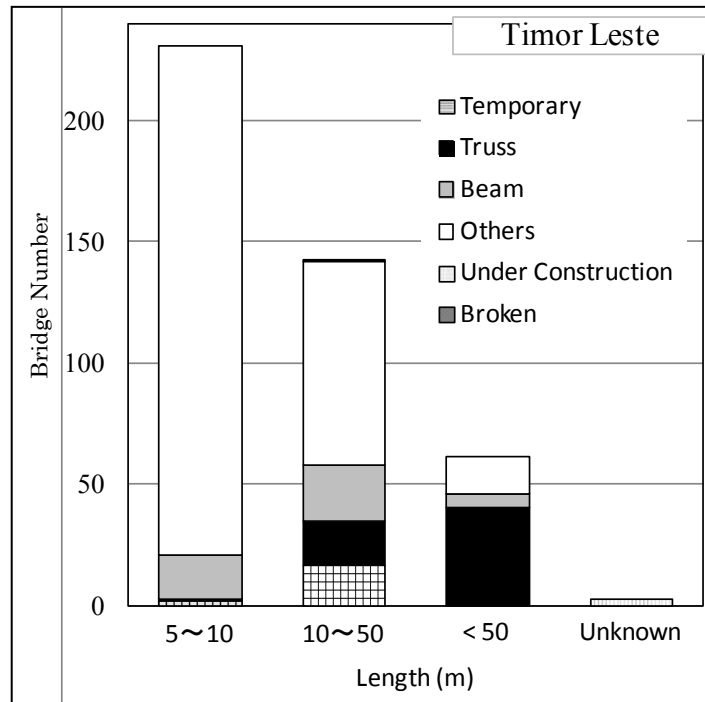
Region	Road No.	UNMIT		Bridge Register Database Ver1	
		Each Road	Sub-Total	Each Road	Sub-Total
DILI	A01	19	68	34	103
	A02a	2		6	
	A03	37		45	
	A04	10		10	
	A09	0		8	
BAUCAU	A01	14	58	19	87
	A06	19		18	
	A07a	25		13	
	A08	0		37	
SAME	A02a	27	47	26	96
	A02b	0		19	
	A05	3		14	
	A09	0		19	
	A13	3		3	
	A14	14		15	
MALIANA	A02b	19	52	13	114
	A03	9		12	
	A03'	7		8	
	A04	9		14	
	A10	0		17	
	A11	0		25	
	A12	5		14	
	A15	0		10	
	A16	3		1	
OECUSSI	A17	2	28	8	39
	A18	19		21	
	A19	7		10	
TOTAL		253		439	

Source: Bridge Register Database

As a reference, conditions of bridges on national roads are presented in Figure and Table below.

[Bridge Type and Length (Physical Condition)]

- 213bridges (53%) is categorized 5-10m.
- The Bridge type of Box-culvert, Deck slab, or Colgate pipe bridge (categorized to “others”) is major (310bridge, 71%).
- The ratio of “Truss bridge” becomes higher rate in the bridges longer than 50m.



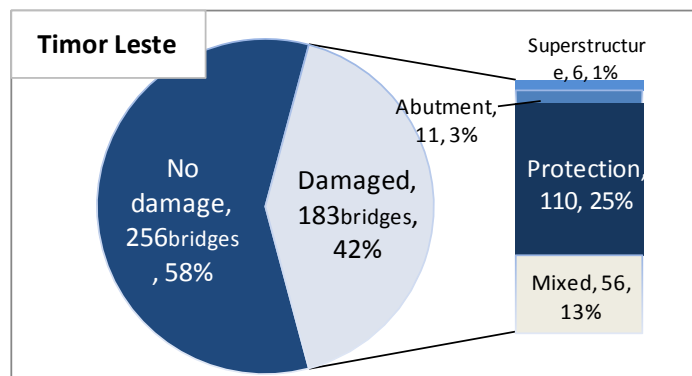
Source: Bridge Register Database

Figure 3.1.1 Summary of Bridge Type and Length

Note: Type indicated as others are box-culvert, deck-slab, pipe culvert, causeway, etc.

[Damaged Ratio of Bridge]

- 42% (183bridges) have some damage.
- The major damage is 1) break, 2) crack, and/of 3) scoring of Protection.
- The second major damage is Mixed (means “Protection damage”+”Abutment damage”/”Superstructure damage”).

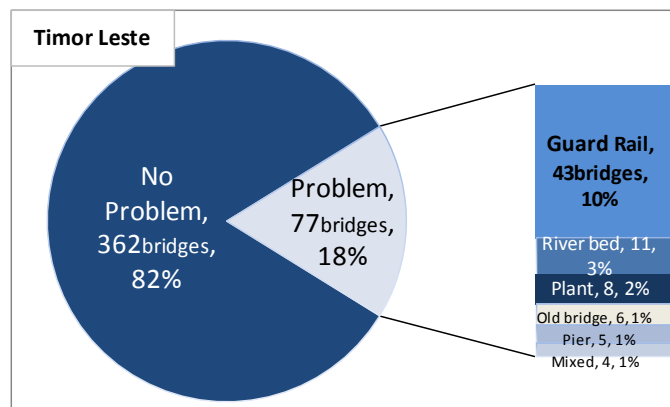


Source: Bridge Register Database

Figure 3.1.2 Summary of Damaged Ratio of Bridge

[Problem of Bridge surroundings]

- 77 bridges (18 %) have some Problem of Bridge surroundings.
- The main reason of problem is concerned with guard rail (43bridges; stolen, missing, and/or break), and second is “River bed” raise with the sand/stone and block the river.
- Each regional office has some special problem such as Old Bridge is remaining in the river (Baucau), plant block the river flow (Dili, Oecussi), pier scoring (Same, Maliana).



Source: Bridge Register Database

Figure 3.1.3 Summary of Problem around Bridge

3.2 Collection of Data on Bridge Servicing, Operation and Maintenance

Currently, as of July 2014, Timor-Leste does not systematically save technical data on the servicing, maintenance and operation of their bridges. However, creating methods from zero to service, maintain and operate the bridges would not be effective. For this reason, we decided to prepare methods used for the maintenance of bridges in Timor-Leste based on the data available on servicing, maintaining and operating bridges from a similar country, adjusting for the conditions of Timor-Leste.

Upon finding suitable countries based on these conditions, the technical data for Japan was judged to be most suitable for the following 3 reasons, and is now used as the principal data for Timor-Leste.

[Reasons]

1. Timor-Leste and Japan both have high-altitude mountain ranges in the centre. Additionally, as the distance to the coastlines from the mountains is short, many bridges in both countries have easily damaged by floods.
2. As Timor-Leste is an island country like Japan, many bridges have been built along

the coastline. Many techniques to deal with damage characteristic to bridges of the area, such as salt damage, have been implemented in Japan.

3. While there is a difference in technical standards between Timor-Leste and Japan, there is lots of well-organized, systematic data on maintenance and operation available from Japan.

Out of the data what we collected, the following is the suitable document that was, after adjustment based on the current conditions of Timor-Leste, selected to be the principal data for bridge operation and maintenance in Timor-Leste.

Table 3.2.1 Principal Data contributing to Bridge Operation and Maintenance Methods for Timor-Leste

1.	Outline of periodic inspections of bridges (draft), March 2004, Japanese Ministry of Land, Infrastructure, Transport and Tourism (MLIT), National Highway Division and Erosion and Sediment Control Division.
2.	Reference for emergency response regarding river-related facilities, 15 December 1975, Revised 6 April, 2012, MLIT
3.	Outline of public works facilities, 2011 version, second edition, rivers edition, chapter 2: river-crossing facilities, MLIT, Kyushu Region Maintenance Department

3.3 Understanding of the Current Status of Bridge Servicing, Operation and Maintenance in Timor-Leste

For the Timor-Leste bridge register database fortification support (budgeting for cost of repair), there are two major points about the country's current condition that must be understood. The first is the status of infrastructure construction of road/ bridges by aid organisations. The second is the technical standards for the maintenance and operation of bridges in the country. These are mentioned in detail below.

3.3.1 The status of infrastructure maintenance of road bridges by aid organisations

Currently, as of July 2014, JICA, along with many other aid organisations, have been giving assistance to the infrastructure construction of road/ bridges in the country. This support includes plans to widen roads and rebuild bridges within specially designated sections of major roads. For this reason, the principal data of current bridge register database (completed November 2012) contains parts that now need updating.

First of all, we collected information on the roads and bridges that were updated. To collect this data, we consulted with Mr Yuki Tateyama, an advisor for MPW, for a general outline of the support mentioned above. We then got specific data from each donor organisation. A compilation of the collected data is displayed below. In addition, as the figure below shows,

some data could not be obtained as the corresponding projects have not yet been accepted by construction contractors, or the construction plan has not yet been confirmed.

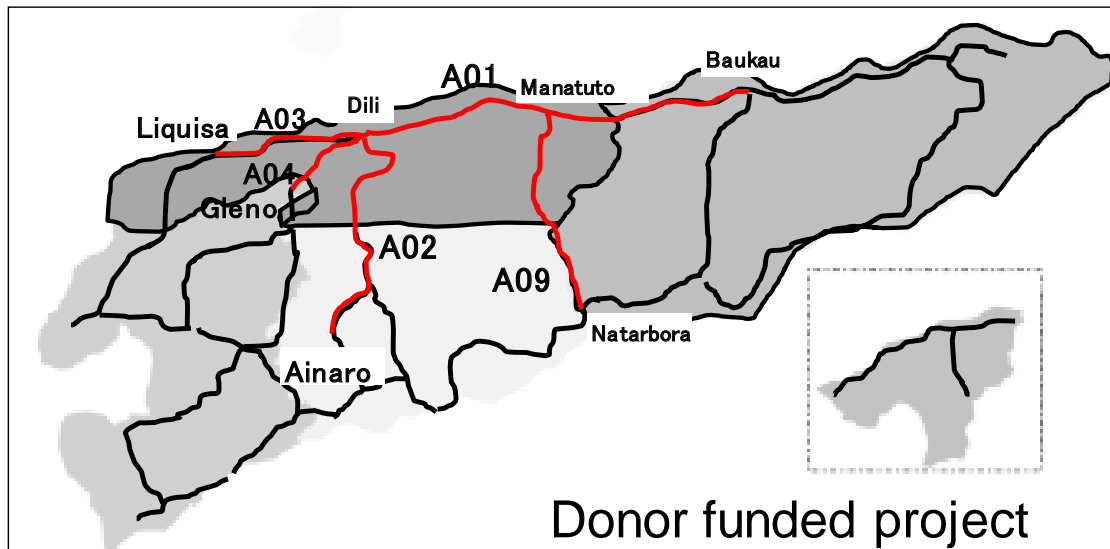


Figure 3.3.1 Location of Projects Relating to Road Widening and Bridge Rebuilding by Aid Organisations.

(Red line)

Table 3.3.1 List of Projects relating to Road Widening and Bridge Rebuilding by Aid Organisations.

No	Location	Fund	Road Number	General information	Bridge Design
1	Dili-Manatuto Sta. 0+000 - Sta. 56+400	JICA	A01 National Road No. 1	○	○
2	Dili-Ainaro Road,(Halilaran to Laulara) km 2.0 (Sta.2 + 000) to km 12.0 (Sta. 12 + 000)	WB	A02 Stage-1 Lot-1	○	-
3	Dili-Ainaro Road,(Laulara to Solerema) km 2.0 (Sta. 12 + 000) to km 12.0 (Sta. 34+620)	WB	A02 Stage-1 Lot-2	-	-
4	Dili-Ainaro Road, (Solerema to Bandudatu) km 34.62(Sta.34+620) to km 64.0(Sta. 64+000)	WB	A02 Stage-1 Lot-3	○	○
5	Dili-Ainaro Road,(Bandudato to Aitutu) km 64.0(Sta. 64+000) to km 89.0(Sta.89+000)	WB	A02 Stage-1 Lot-4	○	○
6	Dili-Ainaro Road,(Aitutuo to Ainaro) km 89.0(Sta.89+000) to km 112.0(Sta.112+000)	WB	A02 Stage-1 Lot-5	○	○
7	Dili-Tibar-Liquica R-3; station 06+828 - station 35+544.87	ADB	A03 Road link A03 - 01/02	○	-
8	BATUGADE-MALIANA Road maintenance component A03-05/RMC-01 (KM1 +150 -KM 6+000)	ADB	A03 Road	△(partial)	△(partial)
9	Tibar - Gleno R- 4A; Station 13 + 985.800 - station 45 + 855.57	ADB	A04 Road link A04 - 01/02	○	-
10	Manatuto-Laclubar Junction Sta. 65 + 235 to Sta. 100 + 360	ADB	A09 ADB Loan Nos. 2857/2858	○	○
11	Laclubar Junction - Natarbora Sta. 100 + 360 to Sta. 144 + 995	ADB	A09 ADB Loan Nos. 2857/2858	○	-

Source: MPW/DRBFC

Presently, as the table below shows, the data of 60 bridges – including the data from each donor organisation and the data from the MPW bridge register database – is being compiled and reflected to the database in accordance with future construction conditions.

Table 3.3.2 Outcome of Compilation of the Aid Organisation Support Project List and the Bridge Resister Database (in progress).

Donor Funded Project				MPW Database		Remark
No	Road	Bridge Name	Km	Bridge No	Km	
1	A01	Mota Ulun Bridge	0+041.500	DI-005	5+700	New A01 Database 0km= Donor Sta 5.7km
2	A01	Hera 1/2 Bridge	8+279.273 & 8+328.926	DI-005-007	13+500	
3	A01	Metinaro Bridge	18+130.475	DI-010	18+800	
4	A01	Behau	19+261.970	DI-022	45+040	

Donor Funded Project				MPW Database		Remark
No	Road	Bridge Name	Km	Bridge No	Km	
5	A01	Metinaro Bridge	20+277.380	DI-011	20+300	
6	A01	Mota Lainlidun Bridge	39+962.239	-	-	New
7	A01	Beheda	47+613.700	DI-024	54+500	
8	A01	Marmer	50+081.915	DI-023	48+000	
9	A01	Manatutu Bridge	8+901.700 & 8+921.700	DI-033	83+300	
10	A02	-	42+550.00	-	-	New A02 Database 0km= Donor Sta 0km
11	A02	Malere Bridge	44+479.26	SA-001	46+600	
12	A02	-	57+431.50	-	-	New
13	A02	Leogoa Bridge	59+631.30	SA-003	58+200	
14	A02	Daisoli Bridge	58+789.13	SA-004	59+500	
15	A02	Saka Bridge	72+860.00	SA-009	72+700	
16	A02	Aitalu Bridge	75+241.54	-	-	New
17	A02	Eralesu Bridge	87+977.396	SA-017	89+700	
18	A02	Malushun Bridge	91+797	-	-	New
19	A02	Naiber Bridge	95+334.70	SA-021	96+700	
20	A02	Tolemao Bridge	99+065.30	SA--022	100+400	
21	A02	Busakua Bridge	100+730.60	SA-023	102+000	
22	A03	Batugade Bridge	-	MA-022	114+000	A03 Database 0km = Donor Sta 0km
23	A04	Mota Hare Bridge	28+480 & 28+525	MA-034	19+600	A03 Database 0km = Donor Sta 2.7km
24	A04	Railaco Bridge No1	32+596 & 32+689	-	-	New
25	A04	Railaco Bridge No2	33+757 & 33+803	-	-	New
26	A04	Faliman Bridge	45+794 & 45+855.57	-	-	New
27	A09	-	69+768.30	-	4+500	A09 Database 0km = Donor Sta 65.2km
28	A09	Manatutu	71+190.77	DI-096	6+000	
29	A09	Manatutu	81+300	DI-097	16+000	
30	A09	Manatutu	86+266.86	DI-098	21+100	
31	A09	Manatutu	92+528.00	DI-099	27+300	
32	A09	Manatutu	93+280	DI-100	28+000	
33	A09	-	96+430	-	31+200	
34	A09	Manatutu	96+580.00	DI-101	31+300	
35	A09	Rulalan Bridge	101+042.00	SA-059	33+200	
36	A09	Rulalan Bridge	101+928.84	SA-060	35+500	
37	A09	Lakumeti Bridge	104+119.00	SA-061	37+000	
38	A09	Lakumeti Bridge	104+402.54	SA-062	37+200	
39	A09	-	104+606.00	-	-	New
40	A09	Fatumetak Bridge	105+652.56	SA-063	40+900	

Donor Funded Project				MPW Database		Remark
No	Road	Bridge Name	Km	Bridge No	Km	
41	A09	-	105+851.50	-	-	New
42	A09	-	106+490.00	-	-	New
43	A09	-	108+500.36	SA-064	43+100	
44	A09	-	110+738.00	SA-065	45+000	
45	A09	-	110+991.12	-	-	New
46	A09	-	111+051.00	SA-066	46+900	
47	A09	-	112+551.72	SA-067	47+000	
48	A09	Salao Bridge	113+450.22	SA-068	48+400	
49	A09	Salao Bridge	114+284.00	SA-069	49+300	
50	A09	Salao Bridge	115+872.44	SA-070	50+000	
51	A09	Kaenlaran Bridge	-	SA-071	51+300	
52	A09	Kaenlaran Bridge	127+577.56	SA-072	62+500	
53	A09	Manehat Bridge	128+255.94	SA-073	62+100	
54	A09	Manehat Bridge	128+507.21	SA-074	64+400	
55	A09	-	134+201.93	-	-	New
56	A09	-	139+168.69	-	-	New
57	A09	Kenoin Bridge	140+041.00	SA-075	75+000	
58	A09	Lamaran Bridge	140+568.00	SA-076	75+300	
59	A09	Lamaran Bridge	142+591.12	SA-077	74+300	
60	A09	-	143+224.37	-	-	New

3.3.2 Technical standards for the maintenance and operation of bridges in Timor-Leste

As well as confirming the technical standards of the maintenance and operation for bridges at site, it was also covered by hearing. Present at the hearing was Eng. Rui Hernani F Gutterres, the Director of the MPW, DRBFC who directly oversee the infrastructure project in Timor-Leste. Also present was, from the Dili Regional office, which focuses on infrastructure projects, Eng. Joao Pedro Amaral; the Director of that organization who directly commands the related projects.

The outcome of the confirmation and hearing showed that, for the inspection and diagnosis of the bridges, in parallel with the previously obtained Japanese draft outline for periodic inspection of bridges, the points outlined below are judged to be diagnosable for damage. However, the methods of diagnosis are limited to visual methods. It is difficult technically to use ultrasonic testing and other non-visual methods here. Therefore, as a particular example, if the reinforcing bars on a deck slab bridge have been exposed, it can be difficult to understand how much the rust has spread. Furthermore, as crocodiles live in rivers in parts of Timor-Leste, it would be difficult to descend from some bridges to inspect bearing and Anchorage zone of truss bridge for loosening and falling out of parts.

Table 3.3.3 Types of Bridge Damage Diagnosable in Timor-Leste

Section/Component		Applicable damage type		
		Steel	Concrete	Other
Upper Structure	Girder	Corrosion	cracking	-
	Truss	Cracking	Detachment, reinforcing bar exposure	
	Box Culvert	Rupturing	Water leakage, efflorescence	
	Corrugate	Paint peeling, rust	Discolouration	
	Deck Slab	Anchorage zone abnormalities	Anchorage zone abnormalities	
		Expansion gap abnormalities	Expansion gap abnormalities	
		Abnormal sonic vibration	Abnormal sonic vibration	
		Abnormal curving	Abnormal curving	
		Deformation, loss of parts	Deformation, loss of parts	
		Loosening, falling out of bolts	-	
Lower structure	Abutment, Pier, foundation	-	Upper structure damage types + scouring	-
Protection		-	Same as upper structure damage types	Upper structure damage types + scouring, erosion (stonemasonry, gabions)
Peripheral facilities	Guard rail	-	-	Thievery and/or loss of parts
	Riverbed	-	-	Accumulation, riverbed obstruction by plant life
	Other	-	-	Downstream obstructions etc.

Source: CDRW Data

The following damaged sections common in Timor-Leste can be repaired and improved relatively easily by applying certain techniques. Riverbed obstruction from plant life and accumulation of earth and sand can also be corrected by excavation using a backhoe, or similar.

Table 3.3.4 Relatively Easy Repair and Restoration Techniques for Damaged Sections

Type of Damage	Applicable repair/maintenance technique
Road surface cracking, deformation, partial loss	Asphalt overlay
Slight corrosion of steel bridges	Scraping (of rust), repainting
Concrete/stonemasonry cracking, detachment, deformation, partial loss	Mortar Injection

Type of Damage	Applicable repair/maintenance technique
Scouring	Refilling of low quality (disposable) concrete, foot protection work with gabion
Other	Excavation by backhoe for earth and sand accumulation and riverbed obstruction from plant life, general works for concrete, stonemasonry and gabions

Source: CDRW Data

Finally, there are two major cases for which repair work appears difficult. For bridges with these cases below, a rebuilding of those bridges would be ideal.

1. Cases of exposure of reinforcing bars on deck slab bridges.

It is difficult to determine the degree to which corrosion has progressed on the concrete centres of the reinforcing bars. Furthermore, if a reinforcing bar is scraped or repainted after a part of concrete becomes detached, it would be difficult to keep the designated strength as these techniques may not be sufficient.

2. Cases of heavy corrosion of steel bridge components.

It is difficult to repair these bridges as it is difficult to determine the degree of corrosion of the sections' interiors, and scraping may not be sufficient.

3.4 Consideration for Basic Concepts of Damaged Parts

In this section, we have systematized the way of thinking (basic concept) which will serve as basis for repair and maintenance work of bridge damage parts, including problematic phenomenon which occurs around the bridge. This concept is based on the following two points of view.

1. The durability of the bridge in Timor-Leste (What's the durability of a new bridge? Will it withstand a normal use?)
2. Regarding the damaged parts and problematic phenomenon within the bridge, which approach, repair, replace, or perform normal maintenance, is the most suitable in terms of economical aspect and safety.

3.4.1 Establishing the durability for the bridge in Timor-Leste

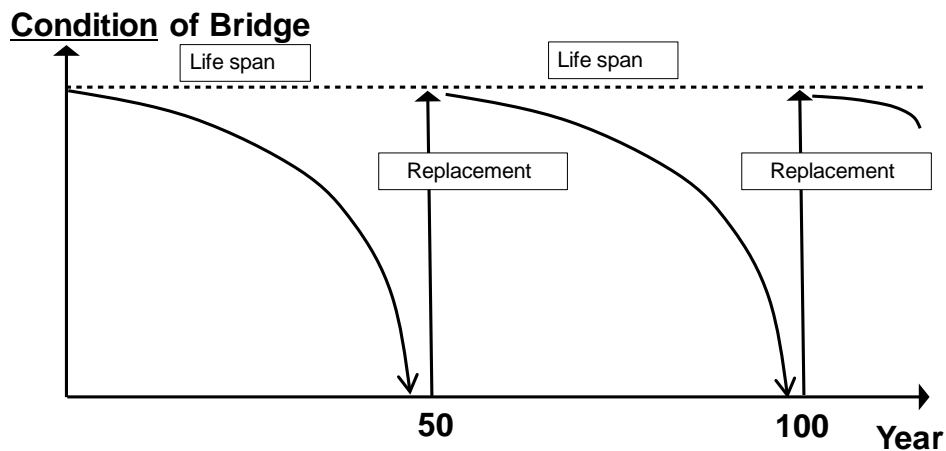
It is difficult to accurately predict the durability of the bridge (estimate the lifetime) because of the following considerations.

[Reasons]

1. Bridges are custom-made
2. Each individual bridge differs due to the natural environment where the bridge is built, its traffic volume, vehicle types, flood frequency and other conditions. Moreover, the traffic volume can change in time because of the changes made over time due to urban development.
3. There are cases when the bridge is not used anymore. Because some routes are

changed or replaced due to urban planning modifications.

Because of the above considerations, it is difficult to predict the durability of a bridge. However, we have consulted approximations made so far for each country and we have established the bridge's durability in Timor-Leste. To be specific, we have had as reference its neighboring countries: Indonesia (lifetime: 75 years) and Japan (lifetime: 100 years). In consultation with Eng. Rui Hernani F Gutterres, the Director of the MPW, DRBFC, we take into account of the differences in technological level between these countries and Timor-Leste and we have decided that the durability of a bridge in Timor-Leste is 50 years. (Refer to Fig 3.4.1)



Source: CDRW

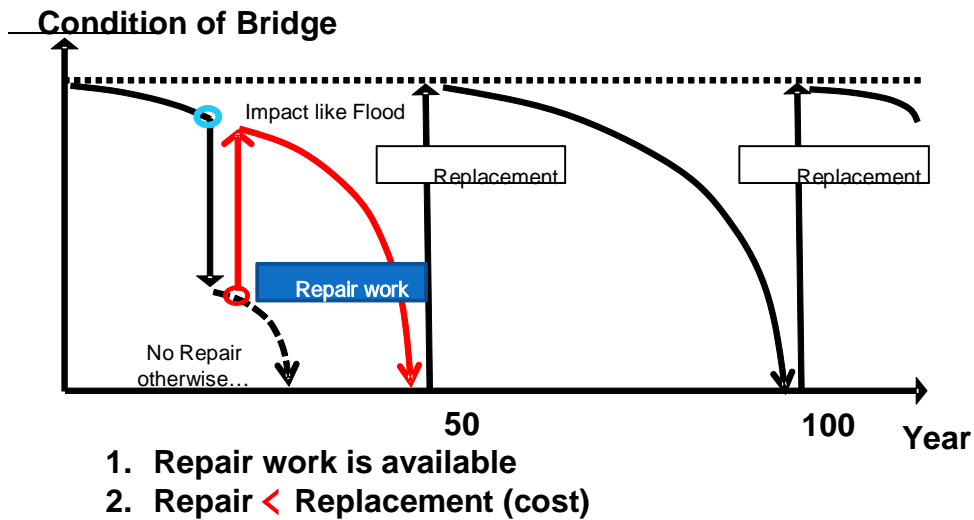
Figure 3.4.1 The Durability and Replacement Time for a Bridge in Timor-Leste

3.4.2 Establishing the basic concept regarding each damaged part

We have discussed the basic concept regarding each damaged part at the time of setting the durability to 50 years, according to the considerations of the preceding paragraph.

(1) The basic concept of repairing the damaged parts

We apply repairing work when the cost of it is lower than the cost of replacement. Moreover, the applied repairing techniques are suitable level for Timor-Leste (Referred to Fig3.4.2). Figure 3.4.2 shows the rapid broken by disasters. If repairing works were not carried out timely, the bridge would damage severely and cause of the road blockage. However, when bridges will be repaired timely, it would be retained before disaster conditions.

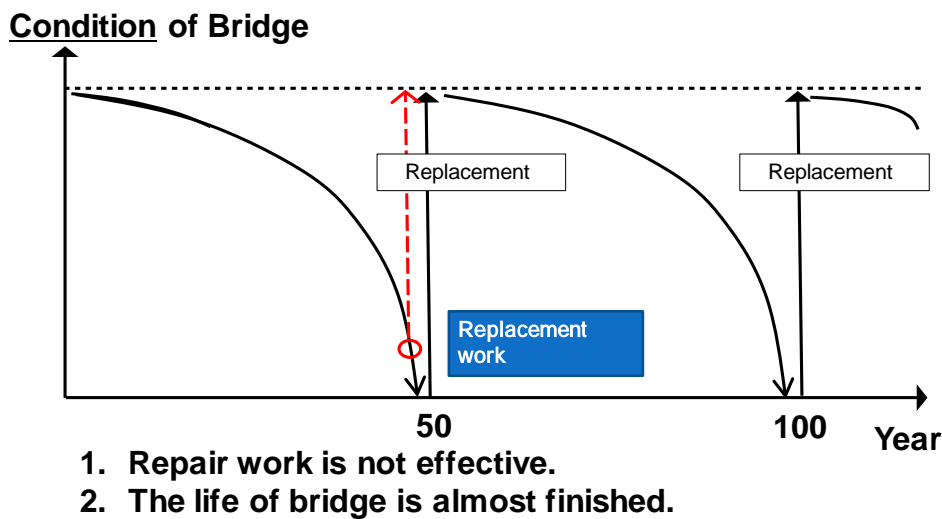


Source: CDRW

Figure 3.4.2 The Basic Concept of Repairing the Damaged Parts

(2) The basic concept of replacing the damaged parts

We apply replacing work in case the damaged parts cannot repair completely but replaced instead. Furthermore, the rest of bridge's durability is short and applicable repairing techniques are not satisfactory in Timor-Leste. (Referred to Fig3.4.3)

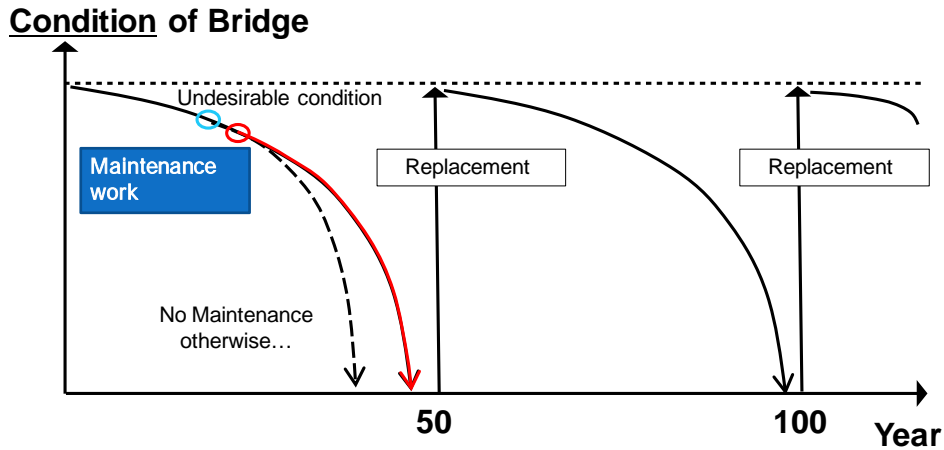


Source: CDRW

Figure 3.4.3 The Basic Concept of Replacing the Damaged Parts

(3) The basic concept of performing normal maintenance when problems appear around the bridge

We perform normal maintenance in case problem discovered in the inspections and it seems to shorten the original durability of the bridge (if the problem has been left as it is, referred to Fig 3.4.4).



Source: CDRW

Figure 3.4.4 The Basic Concept of Performing Normal Maintenance



3.5 Matching the Techniques to Basic Concepts





The “Review of the bridge register database and understanding of typical damaged parts” from 3.1 and “3.3.2 Technical standards for the maintenance and operation of bridges in Timor-Leste” from 3.3.2 is reflected in the basic concept from section 3.4. Details are written below.

3.5.1 Applied techniques for repairing damaged parts

Applied techniques for repairing the representative damaged parts are shown in the following table.

Table 3.5.1 Applied Techniques for Repairing the Representative Damaged Parts


Part	Damage type	Main damage reason	Applicable repair technique	Damage photos
Superstructure	Cracking, detachment, deformation, partial loss	<ol style="list-style-type: none"> 1. Load of traffic 2. flood 	Sub-base Repair work, Asphalt overlay	
	Slight corrosion of steel bridges	<ol style="list-style-type: none"> 1. Aging degradation 2. Seawater 	Rust stripping and Re-painting	

Part	Damage type	Main damage reason	Applicable repair technique	Damage photos
Substructure	Abutment, Pier cracking, detachment, deformation, partial loss	Debris flow during floods	Mortar Injection, painting	
	Abutment and pier Scouring	Turbulence during floods	Gabion foot protection	
	Foundation Scouring	Turbulences and Debris flow during floods	Refilling of low quality (disposable) concrete, foot protection work with gabion	
Protection	cracking, detachment, deformation, partial loss	Turbulences and debris flows during flood	Concrete, stone masonry, gabion work *If the present damage is serious, change the material from gabion and stone masonry to reinforced concrete.	

3.5.2 Applied replacing work to the damaged parts

Applied replacing work to the representative damaged parts is shown in the following table.
(In this case replacement should be conducted without any repairs)




Table 3.5.2 Applied Replacing Works to the Damaged Parts

Part	Damage type	Main damage reason	Applicable replace technique	Damage photos
Superstructure	Exposure (more than applx. 30%) of reinforcing bars on deck slab bridges (concrete bridge)	<ol style="list-style-type: none"> 1. Damaged by seawater 2. Turbulences and debris flows during flood 	Rebuilding of the bridge (RC girder bridge, culvert)	

3.5.3 Performing normal maintenance to the problems appear around the bridge

Performing normal maintenances to the problems appeared around bridge are shown in the following chart.

Table 3.5.3 Performing Normal Maintenances to the Problems Appeared around Bridge

Part	Problem	Main reason	Applicable maintenance technique	Problem's photos
Superstructure part	Protection fence stolen or missing	Thievery and/or loss of parts	Resetting he protection fence	
Riverbed	River bed rise	<ol style="list-style-type: none"> 1. Flat terrain 2. Flood 	Excavation	
	River is blocked by obstruction	<ol style="list-style-type: none"> 1. Flat terrain 2. Flood 	Cut and remove trees and shrubs from the riverbed	

3.6 Consideration of Techniques of Repair and Maintenance for Damaged Parts and Applicable Areas

We have shown renovation and repairing techniques for each damaged part reflected in the basic concept of the preceding section, usual maintenance methods and the technological basis which covers them. (Refer table 3.6.1~3.6.3)

Table 3.6.1 Target Area and Technical Justification for Damaged Parts

Part	Damage type	Applicable repair techniques	Target Area (Unit)		Technical justification
Superstructure	Cracking, detachment, deformation, partial loss	Asphalt overlay	Scale verified at site with measure	m ²	Measurements is performed at site*
	Slight corrosion of steel bridges	Rust stripping and Re-painting	Bridge size (bridge length * road width)	m ²	The rust most probably spread within the Super structure. Then removal of the rust completely and re-painting is recommended.
Substructure	Abutment, cracking, detachment, deformation, partial loss	Mortar Injection, painting	Abutment height (from the river bed to the superstructure) * abutment width (road width)	m ²	The crack most probably spread over the abutment. Then mortal injection to whole abutment is recommended.
	Pier cracking, detachment, deformation, partial loss	Mortar Injection, painting	Pier height (from the riverbed up to the superstructure) * Pier width (road width)*2	m ²	The crack most probably spread over the Pier. Then mortal injection to whole Pier is recommended.
	Abutment, Pier cracking, detachment, deformation, partial loss	Mortar Injection, painting	Scale verified at site with measure	m ³	Measurements is performed at site*
	Abutment Scouring	Gabion foot protection	Abutment width (road width) * length: 2m * foot protection depth: 1m	m ³	The scouring most probably spread over the Abutment. Then foot protection work around the abutment

Part	Damage type	Applicable repair techniques	Target Area (Unit)	Technical justification
				is recommended.
	Pier Scouring	Gabion foot protection	Pier width (road width) *2* length: 2m * foot protection depth: 1m m ³	The scouring most probably spread over the Pier. Then foot protection work around the Pier is recommended.
	Foundation Scouring	Refilling of low quality (disposable) concrete, foot protection work with gabion	1. Front apron(Concrete), River width (bridge length) * Downstream length: 5m * Depth: 1m 2. Bed protection work(Gabion) River width (bridge length) * Downstream length: 5m * Depth: 1m m ³	In Timor-Leste there is almost no measure taken to protect the Calvert foundation. That sometimes makes severe scouring. It is recommended to make suitable Front apron (Concrete) and Bed protection work (Gabion). The technical standard is quoted from "Outline of public works facilities, 2011 version, second edition, rivers edition, chapter 2: river-crossing facilities, MLIT, Kyushu Region Maintenance Department"
Protection	cracking, detachment, deformation, partial loss	Concrete, stone masonry, gabion work	1. Bridge length is less than 10m Protection length: 10m * Width: 1m * Height 2m 2. Bridge length is between 10m and 30m Protection length: 10m to 30m * Width: 2m * Height:3m 3. Bridge length is m ³	The main bridge damages in Timor-Leste are focused on the protection. The reason for this is standards are not specified clearly. It is recommended to make an effective protection for bridge. Technical standards

Part	Damage type	Applicable repair techniques	Target Area (Unit)	Technical justification
			<p>more than 30m Protection length: 30m * Width: 3m * Height:4m *1. Protection should be construct upstream and downstream, left and right bank *2.In case the bride doesn't has protection; we calculated the stonemasonry protection according to the above mentioned standards. *3. If the present damage is serious, change the material from gabion and stone masonry to reinforced concrete.</p>	are quoted from "Reference for emergency response regarding river-related facilities, 15 December 1975, Revised 6 April, 2012, MLIT."

Table 3.6.2 Technical Basis and Dimensions in the Case of Replacing the Damaged Parts without making Repairs

Part	Damage type	Applicable replacement techniques	Target Area (Unit)	Technical justification
Superstructure	Exposure of reinforcing bars on deck slab bridges (concrete bridge)	Rebuilding of the bridge (RC girder bridge, culvert)	Bridge size (bridge length * road width)	<ol style="list-style-type: none"> 1. It is difficult to apply repair work. 2. It is more reasonable and cheap to replace entirely.

Table 3.6.3 Target Area and Technical Justification for Normal Maintenance Work

Part	Damage type	Applicable maintenance techniques	Target Area (Unit)	Technical justification
Superstructure part	Protection fence stolen or missing	Thievery and/or loss of parts	Scale verified at site with measure *Prevent stealing by filling the concrete into the pipe.	
River bed	River bed rise	1.Flat terrain 2. Flood	1. Bridge length is less than 10m River width (bridge length) * Downstream length: 10m * Depth: 1m 2. Bridge length is between 10m and 30m River width (bridge length) * Downstream length: 10m to 30m * Depth: 1.5m 3. Bridge length is more than 30m River width (bridge length) * Downstream length: 30m * Depth: 2m	Apply the Protection concept and decide the Target Area
	River is blocked by obstruction	1.Flat terrain 2. Flood		

3.7 Collect Information on Unit price for Repair and Maintenance Techniques

We have grasped the unit price data regarding repair, replacement and normal maintenance applied at damaged and problem parts. As a result, it is possible, for the most part, to apply unit price from road maintenance databases up to the previous financial year.

However, the unit price for rebuilding and Rust stripping and Re-painting, as outlined in the table below, has been newly established in line with the general estimated unit price in Japan, and with reference to the unit price used in the bridge in the Timor-Leste National Road A01 JICA Loan Project.

Table 3.7.1 Newly Established Unit Prices in the Bridge Database

Part	Type of Damage	Applicable Repair and maintenance works	Established Unit Price
Surface work	Exposure of reinforcing bars (concrete bridge)	Rebuilding of the bridge (RC girder bridge, culvert)	1. Deck slab, Girder bridge 2,000 USD/m ² 2. Truss bridge 1,500 USD/m ² 3. Box culvert 1,000 USD/m ²
	Slight corrosion of steel bridges	Rust stripping and Re-painting	200USD/m ²

3.8 Work to Upgrade Bridge Register Database (Training)

In July 2014, based on the points considered in the preceding section, we had training for preparation of the budgeting, such as i) diagnosis for damaged parts, ii) determination to which technologies should be applied, iii) setting target areas based on pre-existing data. The result of the training is attached in Attachment 3.1

3.9 Rebuilding Bridge Register Database System and Creation of Guideline

We finalized the Database program and updating the database based on the reform points put into order in the preceding sections. Furthermore, we create “Guideline for the Bridge Register Database Ver.2” describes how to use it in detail. The guideline was submitted to DRBFC.

Here in below, we show the new section page (Damage part inspection, Budget summary, and Cover page) at this rebuilding bridge register database.

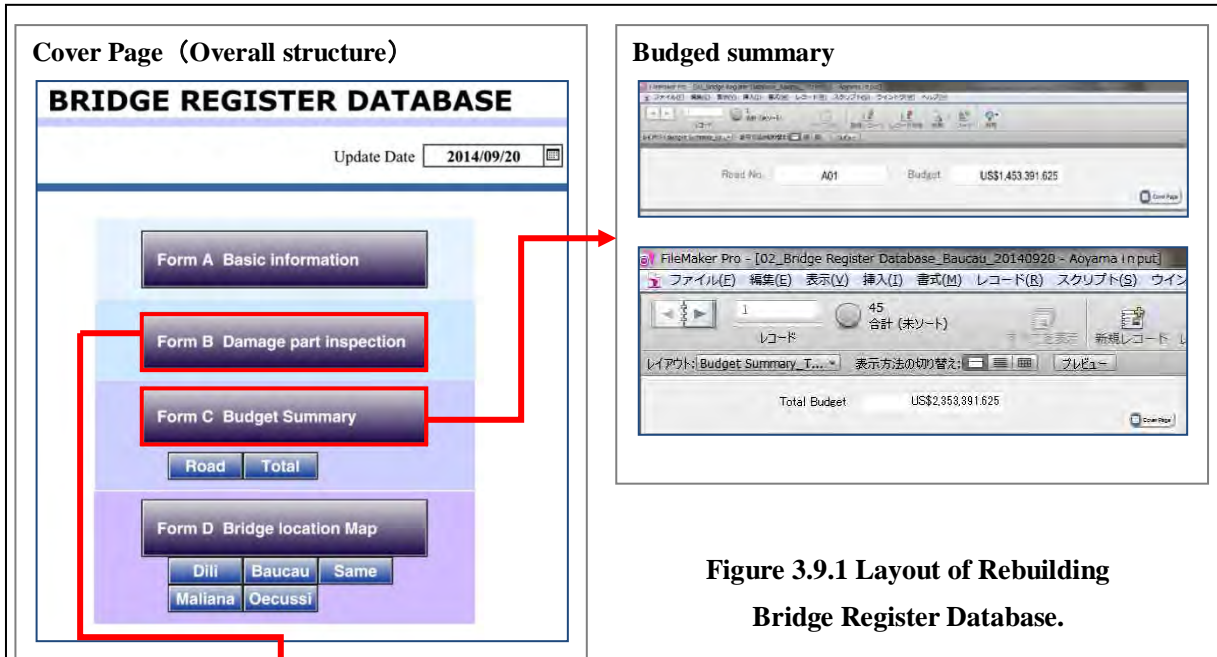


Figure 3.9.1 Layout of Rebuilding Bridge Register Database.

Damage part inspection with budget

Damage part inspection

Date of Survey: 2014/09/25 Bridge No: B0320 Bridge Name: Ponte Amal Am More Budget Point: 116.5

Road No: A01 Name: Bocofo, Francisco, Agosteo

Detail information:

Part 1	Part 2	Part 3	Material	Situation	Applicable Repair/Maintenance Techniques	Length (M)	Width (M)	Height (M)	Volume	Unit	Unit Cost	Evaluated Cost	Remark	Kat
1	Support structure	(1) Spill Way	Reinforced Concrete	Cracking, settlement in part	Reinforce / Reinforce / Repair / Repointing	300	0.4	0.4	48.0	m ³	163	7,824.00		15-04
2	Superstructure	(1) Slab	Concrete	Cracking	Crack Seal	10	4.0	0.1	40.0	m ³	47	1,880.00		15-01
3	Protection	(1) Asphalt	Asphalt	Cracking, surface wear	Resurface / Resurface / Resurface	20	4.0	0.1	80.0	m ³	518	41,440.00	Change Material to Concrete	15-04
4	Foundation	(1) Concrete	Concrete	Settlement	Reinforce	10	1.0	1.0	10.0	m ³	518	5,180.00	Change Material to Concrete	15-04

Subtotal: US\$12,595 Proposed Budget: US\$20,3425 (0.5 coefficient x 1)

Pictures:

Picture 1 to Picture 6 with 'Insert Picture' and 'Export Picture' buttons.

3.10 Training Operation at Site Using the Improved Database

We conducted the training from 8th Sep 2014 to 10th Sep 2014 between Baucau to Com A01 road, 10 bridges. On this training, the DRBFC staffs became able to

- 1) Diagnose damaged parts
- 2) Judge techniques to be applied
- 3) Estimate the Volume for budget

This OJT reinforced the DBFRC staffs to estimate the budget for bridge renovation work.



Figure 3.10.1 Site survey Location map (Baucau-Com)



Figure 3.10.2 Picture of Bridge Resister Database Site Survey

Bridge Resister Database Inspection Sheet

Basic Data

Date	Inspector	Road Name	Bridge Name	km from B.P.
09/09/2014	Francisco	A01	BA-011 Laga mulia	140.6

Damage Part information

Part 1	Part 2	Material	Situation	Length (m)	Width (m)	Height (m)
1. Superstructure	(1) Deck Slab	(1) Concrete	(1)Cracking, Deformation or partial loss (2)Exposure of Reinforcing bar			
	(2) Garter (beam)	(1) Concrete (2) Steel	(1)Cracking, Deformation or partial loss (2)Exposure of Reinforcing bar (3)Corrosion(rust)			
	(3) Culvert	(1) Concrete	(1)Cracking, Deformation or partial loss (2)Exposure of Reinforcing bar			
	(4) Truss	(1) Steel	(1)Cracking, Deformation or partial loss (2)Corrosion(rust)			
	(5) Guard Rail	-	(1)Missing			
2. Substructure	(1) Foundation (Base structure)	(1) Concrete	(1)Cracking, Deformation or partial loss (2)Scouring "For Apron" (2)Scouring "For River Bed Protection"	5	7.1	1.2
	(2) Abutment	(1) Concrete (2) Stone Masonry (3) Gabion (4) Others	(1)Cracking, Deformation or partial loss (2)Scouring			
	(3) Pier	(1) Concrete	(1)Cracking, Deformation or partial loss (2)Scouring			
	(4) Others	(1) Concrete (2) Stone Masonry (3) Gabion (4) Others	(1)Cracking, Deformation or partial loss (2)Scouring			
3. Protection	(1) Upstream	(1) Concrete (2) Stone Masonry (3) Gabion	(1)Cracking, Deformation or partial loss (2)No protection	10	2	1
	(1) Downstream	(1) Concrete (2) Stone Masonry (3) Gabion	(1)Cracking, Deformation or partial loss (2)No protection	10	2	1
	(2) Downstream	(1) Concrete (2) Stone Masonry (3) Gabion	(1)Cracking, Deformation or partial loss (2)No protection	10	2	1
	(2) Downstream	(1) Concrete (2) Stone Masonry (3) Gabion	(1)Cracking, Deformation or partial loss (2)No protection	10	2	1

Figure 3.10.3 Example of Damage Part Inspection Sheet

3.11 Calculate Budget for Repair and Maintenance Work for Bridges

We calculated an estimated budget at this survey (Baucau to Com, 10bridge) using the bridge resister database following the results of the proposed co-operative work and in-house training.

The budget is 1,453,391US\$. (Protection work cost is major in this budget)

In future, DRBFC staffs continue to investigate the total budget for bridge maintenance and repair work based on this track record.

CHAPTER 4

Training and Instruction on Proper Use of the Equipment

Chapter 4 Training and Instruction on Proper use of the Equipments

4.1 Support to DRBFC for receiving Equipment

4.1.1 Outline of the equipment provided by JICA

In the first year of CDRW, it was necessary for each regional road office of DRBFC to rapidly handle defective areas such as small-scale potholes. A equipment provision plan was drawn up in order to distribute simple road maintenance equipment to each regional road office. The equipment provided by JICA as laid out in the plan was decided after discussion with C/P organizations. The equipment provided is as follows:

Table 4.1.1 Types, Numbers, and Purposes of provided Equipment

No.	Name	Specifications	Q'ty	Purpose of Use
1	Movable Asphalt Sprayer with kettle	CS-PT35K2 made by HANTA - Tank capacity: 340 liters - Spray capacity: 10-23 l/min - Gasoline engine powered for spray. - All items complete on trailer with car wheel - Manually operated	5	- Repair defect on asphalt pavement at limited area - Repair of potholes
2	Asphalt Cutter	ERC16DB made by EXEN - Gasoline engine powered - Cut depth 70-150mm - Attached 5nos. of 16"Size of blade	10	- Same as above
3	Concrete Breaker	BG231 made by MARUZEN - Gasoline +SAE10W powered - Attached flat chisel and 3picks	5	- Same as above - Repair of existing structures
4	Plate Compactor	PC-100 made by SAKAI - Base Plate: 480 x 575 mm - Diesel engine powered - Weight: 103kg	10	- Tamping of the road structure - Tamping for other construction
5	Tamping Rammer	RS45 made by SAKAI - Plate size: 340 x 280 mm - Gasoline engine powered - Weight: 48 kg	10	- Same as above
6	Leveling Instrument	AP-8 Auto Level made by NIKON - Attached tripod and staff (3 nos.)	5	- Topographical Survey - Construction Survey
7	GPS Instrument	GPSMAP62S made by GARMIN - Handy and mobile type	5	- Position measurement - Measurement of database
8	Total Station	Nivo5C made by NIKON - Attached tripod, single prism and pole (4 sets)	5	- Topographical survey for the planning and design
9	Truck with Crane	3.0 ton flatted bed 4WD Truck made by ISUZU. 2.6 ton mounted on crane made by TADANO	5	- Used to transport the above equipment and materials to the site

Source: CDRW Data

Table for actual achievement of equipment supplied by JICA is listed in Attachment – 4.1.

4.1.2 Support for receiving equipment

JICA planned to import the above equipment into Timor-Leste through CDRW implementation within the 4th Year. CDRW will support the DRBFC, which should transfer authority of this equipment to the appropriate local road offices. The equipment imported was temporarily stored at the DRBFC central office, and thereafter it will be transported to each local road office by each C/P organization independently.

CDRW supported DRBFC to mobilize the equipment from Dili Port to DRBFC Office in August and September 2014. The equipment described in above clause was packed 3 packages and shipped to Timor Leste from YOKOHAMA by 2 ships.

Loading Schedule is shown in below.

Table 4.1.2 Packing List for the Equipment

Date of Departure	Bill of Loading	Container No.	Equipment	Package No.
5 th June	JPYOK0368367	1	Movable Asphalt Sprayer	1~5
5 th June	JPYOK0368367	1	Asphalt Cutter	6,7
5 th June	JPYOK0368367	2	Concrete Breaker	12
5 th June	JPYOK0368367	1	Plate Compactor	8,9
5 th June	JPYOK0368367	2	Tamping Rammer	10,11
5 th June	JPYOK0368367	2	Leveling Instrument	12
5 th June	JPYOK0368367	2	GPS Instrument	12
5 th June	JPYOK0368367	2	Total Station	13
16 th July	JPYOK0373740	3	Truck with Crane	14~18

Source: CDRW Data

Import activities for the above Bill of Loading, JPYOK0368367:

- 13th June : DRBFC issued a letter to National of Compliance Customs to request financial contribution for customs duties.
- 26th July : Ship arrived at Dili Port.
- 12th August : Invoice for fee to release container was issued by Dili Port office.
- 14th August : MPW issued a letter to Dili Port Office to request to handle as granted from JICA.
- 19th/21st August : Containers were brought in DRBFC by SDV. (Container handling company)
- 22nd August : Inspection of imported equipment by DRBFC and CDRW.

Import activities for the above Bill of Loading, JPYOK0373740:

- 31st July : DRBFC issued a letter to National of Compliance Customs to request financial contribution for customs duties.

- 5th August : JICA issued a letter to General Customs Office to apply the article of agreement on Technical Cooperation.
- 12th August : Ship arrived at Dili Port
- 4th September : Inspection of imported equipment by DRBFC and CDRW.
- 4th September : Trucks were driven to DRBFC Office by their driver.

Activities by CDRW-4:

- 7th August : CDRW held meeting with Director of DRBFC.
It was confirmed that all cost born in Timor Leste should be owned by DRBFC.

Inspection of Equipment:

- CDRW helped DRBFC to open cargo and counting quantity and checking damage.
- CDRW helped DRBFC to check truck condition for driving from Dili Port to DRBFC Office.

Result of Inspection:

- All equipment was handed over to DRBFC without any damage on outside and in function.
- Owners and Drivers manual of Truck was disappeared three in five. CDRW reported to JICA Head Quarter and prepared three copies for DRBFC.

All equipment was registered as National Treasure and all trucks got “Number Plate” on 15th September.

All equipment was stored at the Central office under Logistic Section, and thereafter, when the preparation will be ready for operation, equipment will be transported to former regional road office step by step.

4.2 Support for Handling of the Equipment

JICA requested to have a seminar to show the handling of supplied equipment in the procurement contract. CDRW made a coordination to have a seminar for the specialist from the maker. The seminar was held from 25th August to 29th August at DRBFC by Japanese Specialist from HANTA Machine and Indonesian Specialist for Construction Equipment and by CDRW Specialist for Survey Instrument.

In order to encourage attendants from regional road offices to be able to participate in the seminar, CDRW discussed with DRBFC to apply a business trip administration. CDRW called mechanic and drivers for the seminar of Construction Equipment, and attendants are showed in below:

Table 4.2.1 List of Participants on the Equipment Handling Training by the Maker

Name	Title (as of August 2014)
TeotonioLuis Fraga	Mechanic of Baucau District
Bendito Lafo	Mechanic of Oe-Cusse District
Bendito Marcel	Mechanic of Bobonaro District
Alfredo Pineiro	Driver /Mechanic of Dili District
Natalino Freitas	Driver of Baucau District
Cipriano da C. Godinho	Driver of Manufahi District
Antonio F. M. da Costa	Driver of Oe-Cusse District
Sergio G. Lopes	Driver of Bobonaro District

Source: CDRW Data

CDRW called surveyors for the seminar of Survey Instruments and attendants are shown in below. Attendants were reached about 20 people so that classification was necessary to share the opportunity by 5sets of instruments.

Table 4.2.2 Participants on Explanation of Handling for Survey Instruments

Name	Title (as of August 2014)
Mariano Barreto P. Soares	Supervisor of Same District
Domingos da Silva Barbosa	Supervisor of Liquica District
Carascalao da Conceicao	Supervisor of Ainaro District
Cristovao de C. Montairo	Supervisor of Dili District
Alfredo Escorial dos Santos	Supervisor of Central Corporation
Fernando F. F. Coils Freitas	Supervisor of Central Corporation
Angelo Ribeiro	Surveyor of Central Corporation
Francisco B. Gama	Surveyor of Central Maintenance
Altino Fernande da Costa	Surveyor of Central Maintenance
Julius Luan Kehy	Supervisor of Central Planning
Julito Pereira	Supervisor of Central Planning
Armando Gama	Surveyor of Central Planning
Martino Mira de C. Belo	Surveyor of Baucau District
Bendito Salsina	Surveyor of Elmera District
Fonsano Augsto da C. Reis	Surveyor of Bobonaro District
Demingos dos Reis Fernandes	Surveyor of Same District
Hernanio Bianco Lopes	Surveyor of Ainaro District
Antonio da Costa Beno	Surveyor of Oe-Cusse District
Juliana C. Rangel	ILO

Source: CDRW Data

CDRW appreciated following Chiefs to support the seminar. They were attended opening meeting to discuss the management and maintenance of provided equipment. Chief of Maintenance was the owner of the seminar and he called all staff.

Chief of Oe-Cussi was companied with the seminar 5days and showed great contribution in the communication between attendants and specialist. Chief of Baucau showed strong request to management and maintenance of equipment by regional base. Chief of Liquica showed strong leader-ship in handling Construction Equipment.

Table 4.2.3 List of District Chief attended the Handling Seminar

Name	Title (as of August 2014)
Joao Pedro Amaral	Chief of Maintenance
Nene Lobato	Chief of Ailiue District
Pedro A. G. Pereira	Chief of Baucau District
Geraldo da C. L. Soares	Chief of Bobonaro District
Aniceto A. T. de Andrade	Chief of Manufahi District
Candido Dos Reis Amaral	Chief of Oe-Cusse District
Nelson Bariss de A.	Chief of Suai District
Devi Emanuel E. F. de Sousa	Chief of Liquica District

Source: CDRW Data

And the seminar program is shown in below. Seminar was held by the Construction Equipment course and Survey Instruments course. Instruction Books for Equipment were prepared in Indonesia language by JICA.

And Instruction Books for Equipment were prepared in English by Japanese Specialist from HANTA Machine also.

Table 4.2.4 Seminar Process for the Handling of the Equipment by the Maker and Survey Instrument

Date	Time	Activity	Place	Material	Note
25 th August Monday	9:00 - 11:00	- Opening Address - Chief Meeting - Purpose of seminar	DRBFC Meeting Hall	- Company brochure - Projector/PC	
	14 :00 - 16:00	- Introduction of Equipment - Operation Confirmation - Handling of Optical devise	Outdoor Meeting Hall	- Instruction Book - All Equipment - Auto Level	Remove package
26 th August Tuesday	9:00 - 11:00	- Seminar: Asphalt Sprayer - Seminar: Level Survey	Outdoor	- Instruction Book - Equipment - Auto Level	Gasoline Engine Oil
	14:00- 16:00	- Seminar: Asphalt Sprayer - Seminar: Level Survey	Outdoor	- Instruction Book - Equipment - Auto Level	Water
27 th August	9:00 - 11:00	- Seminar: Rammer	Outdoor	- Instruction Book - All Equipment	Gasoline Engine

Wednesday		- Seminar: Height Survey		- Auto Level	Oil
	14:00-16:00	- Seminar: Tamper - Seminar: Height Survey	Outdoor	- Instruction Book - All Equipment - Auto Level	Diesel Engine Oil
28 th August Thursday	9:00 - 11:00	- Seminar: Cutter - Seminar: Height Survey - Seminar: Total Station Setting	Outdoor	- Instruction Book - All Equipment - Auto Level - Total Station	Gasoline Engine Oil
	14:00-16:00	- Seminar: Cutter - Seminar: Height Survey - Seminar: Total Station	Outdoor	- Instruction Book - All Equipment - Auto Level - Total Station	Gasoline Engine Oil
29 th August Friday	9:00 - 11:00	- Image Sharing of construction with Equipment - Seminar: Total Station	Meeting Hall Outdoor	- Total Station	

Source: CDRW Data

4.3 Training with provided Equipment

After handingover ceremony, CDRW started to mobilize “Training” with provided equipment for DRBFC for more practical activities by DRBFC. Based on the discussion with DRBFC, CDRW decided to mobilize Training of Total Station and Training of Construction Equipment separately. So that, Training of Total Station was planned to work with Department of Design and Planning and Training of Construction Equipment was planned to work with Department of Maintenance.

Because Training of Total Station was easy to start, it was scheduled in third week in September. And because of Training of Construction Equipment was hard to prepare the expense for manpower, material and tools, it was scheduled in fourth week in September. Training of Total Station was prepared under the attention of Director and chief to execute the topographic survey in two locations and respective purposes. Followings are detail of activities.

1. COMORO Bridge No.4:

Planned area for new bridge construction was the field for topographic survey. This was requested by the director.

16th September : Training was executed for Instrument Setting, Operation of measurement and Operation of software in the total station under the local coordination.

17th September : Training was expanded to execute topographic survey using contractor’s Bench Mark (under the live coordination)

Attendants were following:

Table 4.3.1 Attendants List for Site Training (Total Station) on Comoro Bridge No.4

Name	Title
Julius Luan Kehy	Supervisor of Central Planning
Julito Pereira	Supervisor of Central Planning
Amando Gama	Surveyor of Central Planning
Manuel Soares	Surveyor of Central Planning
Sabino da Costa Ventura	Surveyor of Central Planning
Lourenco Luis	Chief of Central Design
Joao M. Gama de Sousa	Chief of Central Planning

Source: CDRW Data

2. Slope Protection on National Road No.3 at Maubara in Liquica District:

Planned area for new slope protection construction was the field for measurement survey. This is advised and supported by JICA Long-Term Specialist in DRBFC.

19th September : Training was executed for measurement of area of constructed slope using software in the total station under the contractor's Bench Mark.

Attendants were following:

Table 4.3.2 Attendant List for Site Training (Total Station) on Preparatory Work of Slope Protection

Name	Title
Julito Pereira	Supervisor of Central Planning
Amando Gama	Surveyor of Central Planning
Sabino da Costa Ventura	Surveyor of Central Planning
Lourenco Luis	Chief of Central Design

Source: CDRW Data

Training of Construction Equipment was prepared under the attention of Director and chief to execute the pothole repairing on the National Road No.3 at Tibar in Liquica. Due to the budget for Routine Maintenance was not prepared in this fiscal year, Director specially request Chief to establish the proposal for routine maintenance work using supplied equipment for Ministry of Finance.

24th September : There was an advice from Director that the preparation of cost for Training would ready a week later.

25th September : CDRW decided to execute machinery training in DRBFC and start to prepare with Logistic and Chief of Liquica.

26th September : Training of Truck with Crane (Loading and Unloading of the Equipment) and repairing of pothole was executed at the yard in DRBFC Office.

Attendants were following:

Table 4.3.3 Participants List for Site Training of the Equipment

Name	Title
Devi Emanuel E. F. de Sousa	Chief of Liquica District
Aleixo H. G. L. da Cruz	Chief of Dili District
Joao Baptista Soares	Administrator of Logistic
Armindo de Jesus	Driver of Dili District
Rui Soares	Driver of Dili District
Domingos D.S. Barbosa	Engineer of Maintenance
Jose Baptista	Worker of Dili District
Francisco Soares	Assistant Supervisor of Dili
Francisco Almedia Soares	Worker of Dili District
Adelio Cosme O. Guterres	Supervisor of Same Region
Antonio de Araujo	Supervisor of Dili District
Vitalino Abilio S. Fernandes.	Assistant Supervisor of Dili
Agustinho Ataide da Cost	Supervisor of Dili District
Fransisco Barbosa Gama	Supervisor of Liquica District
Domingos Das Neves	Worker of Dili District

Source: CDRW Data

When the budget for Routine Maintenance will be prepared in this fiscal year, Director will make sure to request Chief of Maintenance to execute the routine maintenance work using provided equipment.

4.4 Guide Line for Management and Maintenance of provided Equipment

CDRW prepared Guide Line for Management and Maintenance of provided Equipment for DRBFC with some sample usage form and tutorial video for using the equipment.

In Chapter 1 of the Guideline, contents and management of the equipment on five local offices of DRBFC is mentioned.

In Chapter 2, CDRW propose the management method for the equipment and presented the request form for usage of the equipment.

Moreover, as to the Total Station, which is maintaining the wide capacity in survey and the wide capacity to adapt data to CAD software and Mapping software by SDR33, Sdrlow and CSV files, CDRW introduce the person in the Timor University to consult the survey method and expansion to the soft program like Auto CAD, Civil 3D, etc.

And, DVD in English version was submitted to respective local offices through central office of DRBFC, which is shown how to repair/ construct the damaged places on roads by using the equipment provided in this time.

CHAPTER 5

Promotion of Effects for Overall Program through Sharing Project Achievements

Chapter5 Promotion of the effects for Overall Program through Sharing Project Achievements

5.1 Outline

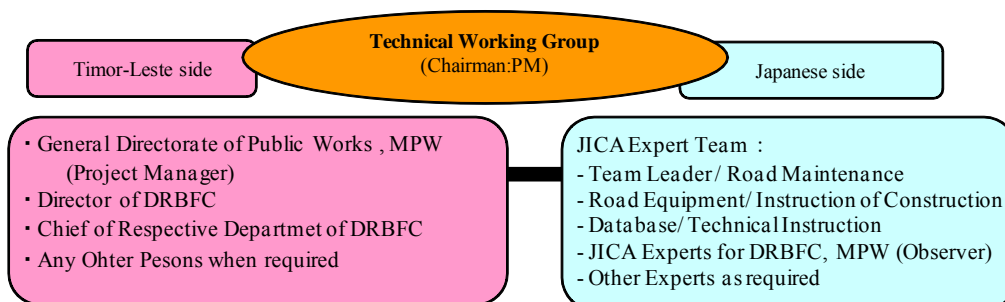
CDRW intended to carry out the activities in the basic policy for CDRW's 4th year. In order to share the results widely, CDRW hold networking meetings of the Technical Working Group Meeting on the results of each activity, and form a Joint Coordinating Committee led by the head of Timor-Leste's C/P governmental organization.

CDRW hold the First Technical Working Group (TWG) Meeting (a works on the improvement of the bridge database) in July, 2014. Furthermore, CDRW hosted the Second TWG Meeting (explanation on future use of the road and bridge database and on methods of use for the machinery provided by JICA) in September, 2014.

Moreover, CDRW hosted Joint Coordinating Committee Meeting at the end of the project. CDRW conducted public relations about the road and bridge database and provided machinery aimed at those connected to Timor-Leste. Additionally, CDRW planed to gain an understanding of the opinions of those connected to Timor-Leste about future road maintenance and management, as well as share information with them. And, handover ceremony for the equipment supplied by JICA was held on September 5, 2014 to make publication of JICA activities in Timor-Leste. This ceremony was broad casted on the evening news of Timor TV program on the same day.

5.2 Technical Working Group Meeting

For communication and information sharing among the staff in DRBFC, Two times of Technical Working Group (TWG) meetings were held with work shop style during CDRW-4 period. Technical Working Group (TWG) Meeting was chaired by the Project Manager (Director General of MPW) and consists of Director of DRBFC and chief of department of DRBFC and its staff and the Project Experts. TWG organization at the end of the Project is shown below:



5.2.1 First Technical Working Group Meeting

On July 4th, 2014, CDRW held the First TWG Meeting (a workshop on the improvement of the bridge database). The main agenda items were an explanation of the 4th Year activities of CDRW, followed by thoughts on the improvement of the bridge database, and explanation on collaboration work. The minutes of meetings and attendant list are attached in Attachment 5.1.

5.2.2 Second Technical Working Group Meeting

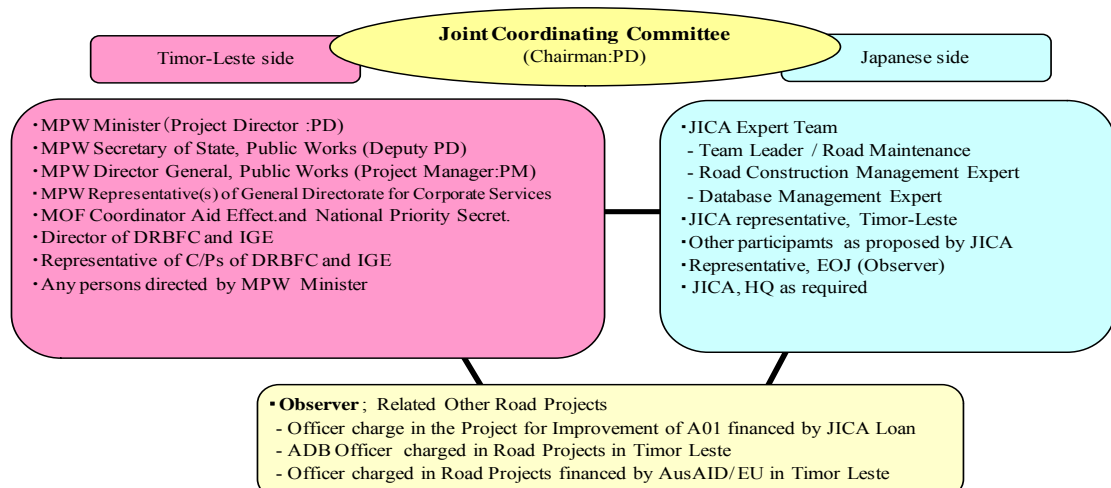
CDRW hold the Second TWG Meeting (a workshop on improvement of the bridge database and proper usage for the equipment supplied by JICA) in September 18, 2014. Main agenda items were a report on the results of the bridge resister database and how it will be used in the future, and an explanation about the method of use of the machinery provided by JICA. Minutes and attendant list are attached in Attachment 5.2 for reference.

5.3 Joint Coordinating Committee Meeting

CDRW smoothly carried out CDRW's 4th year activities, and set up a Joint Coordinating Committee Meeting to create a bridge between the various supervisors so that exchange of ideas and coordination of decision-making between MPW and DRBFC. This Committee is an organization to investigate and decide: i) Progress reports, ii) Concerns regarding the project, and iii) Timely revision of the cooperative plan.

In the committee, in order to promote the support effectiveness of the overall program through sharing the project results, CDRW created a list of those related to other road projects in the same country, coordinate with related organizations, and deepen connections as an observer of this committee.

This committee was set up under MPW, and consisted of the Minister of the MPW as chairman, representatives from each department of the MPW, a team of JICA Experts, and the JICA Timor-Leste office, etc. The structure of the committee is shown in the figure below.



In the period of CDRW-4, Joint Coordinating Meeting was held on September 30, 2014 explanation as to activity results of CDRW-4 and recommendation for future road maintenance services in Timor-Leste. At this meeting it was expected that activity results of CDRW-4 and their recommendations were shared in staff of MPW and DRBFC and other relevant agencies. Minutes of Meeting and Attendant List are attached in Attachment 5.3 and material for JCC is attached in Attachment 5.4 for references.

5.4 Handover Ceremony for the Equipment supplied by JICA

After Truck with Crane (5 nos.) arrived to DRBFC on September 04, 2014, the Handover Ceremony was opened inviting Minister of MPW and Chief Representative of JICA Timor-Leste Office. This Ceremony scene was broadcasted at TV news on the evening of the same day. CDRW expect that this Ceremony was one of public relations for JICA activities in Timor-Leste. In the Ceremony, Handover Note for the equipment was signed between Minister of MPW and JICA Chief Representative. Handover Note is attached in Attachment 5.5 for references.

5.5 Letters and Inter-office Memos submitted to C/P Agencies

For the purpose of sharing of information for the activities on CDRW-4 between the relevant agencies and staff, CDRW submitted several letters and inter-office memos to C/P agencies. Copy of them except addressed person was distributed to relevant persons for the information sharing. During the period of CDRW-4, seventeen (17) letters and seven (7) inter-office memos were submitted. The following shows the numbers, submitted date, address and subjects of submitted letters and inter-office memos.

【Letters submitted during CDRW-4】

No.	Date	Address	Subject
001	Aug.07	Director of DRBFC	Arrival of Mr.K.Naito and Mr.N.Kurihara at Timor-Leste
002	Aug.08	- do. -	Tentative Training Schedule by the Maker for the Equipment supplied by JICA
003	Aug.15	- do. -	Working Schedule on CDRW 4 th Year
004	Aug.23	- do. -	Instruction/Operation Manual for the Equipment supplied by JICA
005	Aug.26	- do. -	Instruction/Operation Manual for the Survey Equipment supplied by JICA
006	Aug.29	- do. -	Arrival of Mr.H. Aoyama for CDRW (4 th Year) at Timor-Leste
007	Aug.30	- do. -	Completion of Training by the Maker for the Equipment supplied by JICA
008	Sep.05	Minister of MPW/ Director of DRBFC	Handover Ceremony for the Equipment supplied by JICA
009	Sep.11	Director of DRBFC	Training at Site for the Upgraded Bridge Register Database

010	Sep.18	General Directorate for Public Works, MPW/ Director of DRBFC	No.2 Technical Working Group Meeting (TWGM-2) on CDRW-4
011	Sep.19	- do. -	Minutes of Meeting for No.2 Technical Working Group Meeting (TWGM-2) on CDRW-4
012	Sep.22	Director of DRBFC	Leaving of Mr.H.Aoyama for Japan on CDRW (4 th Year)
013	Sep.24	- do. -	CD for Instruction Reference to the Equipment supplied by JICA
014	Sep.26	- do. -	Guideline for the Equipment supplied by JICA
015	Sep.29	- do. -	Guideline for the Upgraded Bridge Register Database
016	Oct.02	Minister of MPW	Minutes of Meeting for Joint Coordinating Committee Meeting on CDRW-4
017	Oct.02	Director of DRBFC	Leave for Japan of Mr. K. Naito and Mr. N. Kurihara on CDRW (4 th Year)

【Inter-office Memos submitted during CDRW-4】

No.	Date	Address	Subject
06-08	Jun.23	Director of DRBFC	Invitation for Orientation for “ <i>Bridge Resister Database Updating 2014</i> ”
140708	Jul.08	- do. -	Request for collaborative work with DRBFC (DNEPCC) staffs in Bridge Register Database
140819	Aug.19	- do. -	Handing-Over Ceremony for the Equipment supplied by JICA
140823	Aug.23	- do. -	Final Date, Time and Place of the Handing-over Ceremony for the Equipment supplied by JICA
140908	Sep.08	General Directorate for Public Works, MPW/ Director of DRBFC	No.2 Technical Working Group Meeting (TWGM-2) for CDRW-4
140919	Sep.19	Minister of MPW/ General Directorate for Public Works, MPW	Joint Coordination Committee Meeting for CDRW-4
141002	Oct.02	Director of DRBFC/ JICA Expert, DRBFC	Entrance Room Key for CDRW Office in DRBFC

CHAPTER 6

Project Evaluation and Recommendations

Chapter 6 Project Evaluation and Recommendations

6.1 Project Evaluation

Based on Project Issues as shown in Chapter 2 in this report, evaluation of the Project is mentioned hereinafter.

(1) Suitable application for the bridge register database

Bridge Register Database, which was developed in 2nd and 3rd Year of CDRW, was upgraded in this time so as to estimate the maintenance cost and repair cost for budget request in the Database. By using the upgraded database, CDRW trained the C/P staffs in order to handle the DB and estimate the maintenance and repairing cost at the office and sites by themselves. Now, C/P staff can handle the DB and estimate the required budget for repairing cost for bridges by using the DB. C/Ps have a schedule to survey the bridges which they will start the survey during October, 2014. These situations evaluate that the activity for CDRW-4 will be useful on road services in Timor-Leste.

(2) Suitable use for machinery provided by JICA

Equipment supplied by JICA is simple ones for routine maintenance works of roads. Routine maintenance works should be carried out by force-account basis (direct construction works of DRBFC) since it takes a long time for the Contractor to execute the works with proper procurement method (tender procedure) and contract amount will be required some certain amount and volumes. Demonstration for the equipment was held in August 2014 and 8 staffs from respective local offices of DRBFC were participated. Since the equipment is simple and manual operation ones, it is evaluated that participated staffs can operate the equipment by themselves. In the same time, survey equipment (total station and leveling instrument) was trained by CDRW Expert. Twenty (20) staffs participated in this course and their enthusiasms of C/Ps were found. Site training for survey equipment was executed in two actual sites, it is expected the site training was effective for C/Ps. On the other hand, loading and unloading the equipment to the track with crane, which was also supplied by JICA, was executed by CDRW. Repairing works at actual pot-holes on asphalt road was also trained by using the supplied equipment. These trainings will be useful to use the equipment properly by DRBFC themselves.

(2) Strengthening of connection to projects composing the program, and appeal of activity of CDRW-4

In order to appeal and understand deeply the activity of CDRW-4, two times of Technical Working Group Meeting and one time of Joint Coordinating Committee Meeting were held during CDRW-4 period. These meetings were held with a style of workshop. More than 30 persons including ILO and JICA Loan Project staffs were participated in these meetings. And, after trucks with crane arrive at DRBFC yard on September 4, 2014, the handover ceremony was held on September 5, 2014, participating Minister of MPW and

Chief Representative of JICA Timor-Leste Office and other relevant staffs more than 60 persons. The scene for the handover ceremony was televised on the evening news of Timor TV on September 05, 2014. This was expected to be useful for the one of advertisement of JICA activity in Timor-Leste.

6.2 Recommendations

6.2.1 Suitable application for bridge resister database

- (1) Finalize the total budget for repair and maintenance work for bridges

CDRW Expert developed the database and enabled DRBFC staffs to calculate an estimated budget with co-operative work and on-site training. In future, CDRW expect that DRBFC staffs develop and continue the survey. It is important that, then, they finalize the total budget for repair and maintenance work for bridges.

- (2) Implement routine maintenance works

CDRW developed the database for budgeting including the cost for bridge repair, replacement and maintenance work. Especially, cleaning of drainage on the bridge, removal of trees that have been trapped at the bridge, and cutting the trees on the river should be carried out regularly with or without maintenance inspection survey. By the implementation of the work, the condition of the bridges is kept well and the maintenance costs are reduced. Therefore, it is important to acquire the minimum budget for implement this kind of work in DRBFC

- (3) Implementation of budgeted works and their monitoring system based on the database

The challenge in the future project is to figure out “Acquisition status of the budget” and monitor the implementation of budget as well as be able to reflect to the database properly. It is necessary to do more efforts in DRBFC that the operation of the PDCA cycle using the database.

6.2.2 Proper use of the Equipment

- (1) Organization of DRBFC for routine maintenance works

It seemed that this provision of equipment by JICA brought a new, heavy and big challenge to DRBFC even though considering the first experience to them. Nations Community of Portuguese Language was decided to be held meetings in Timor Leste on May 2013 and was held meetings on July 2014. And only in one year period, rehabilitation and improvement works of roads have been executed in Dili urban area. Some self confidence was observed in the attitude of Chief class in DRBFC, because their works have been completed with Tendering Management and the national meeting was successfully closed. However, these works are not force-account basis work (direct works by DRBFC) but the Contractor’s works after tendering procedures.

As to routine maintenance works on roads, they are required the rapid actions to repair the minor defect places by using the equipment supplied by JICA. Tendering works requires certain periods and certain contract volumes. Therefore, routine maintenance works shall be carried out by force account bases (direct construction) of DRBFC by using the equipment supplied by JICA as possible as they can. For this purpose, some re-structure for DRBFC local offices like establishment of “Maintenance Unit” will be required for smooth operation of routine maintenance works on roads. Therefore, it is recommended to start to re-establish management and resources for the direct work.

(2) Management system of equipment supplied by JICA

Observing periodic maintenance at Dili urban area and at Liquica- Maubara on National Road No.3, and considering the mobilization of rehabilitation and improvement projects by International Donors on National Roads No.1, No.2, No.3, and in Oe-cussi District by DRBFC, demands of routine maintenance work are clearly identified in next step.

On the face to re-establishment, it is recommended that operation chief of equipment and maintenance chief of equipment shall be set up as the center of management of direct work since most of staff in DRBFC are not familiar with provided equipment. CDRW would fully support that Director of DRBFC decided to control the equipment only by Logistic Section until the management of direct work will be ready in the local offices.

And then the ensure of budget of routine maintenance can be a next subject in order to use the equipment as usual tool, and in order to use the equipment by many staffs in DRBFC. It is reminded again that CDRW draw your attention continuously and occasionally for annual update of road maintenance database and request the budget for maintenance works based on the database. So that the provision of equipment can be said the encouragement of the database update.

(3) Safety management for the works

CDRW propose the establishment of “Safety Management” by the safety chief. This management and position shall be expected to work on the standing point of owner of construction and as the instructor of civilian work by the starting from to establish the safety operation of provided equipment.

(4) Transport the equipment to local offices of DRBFC

The equipment was supplied by JICA aiming to routine maintenance works carried out by local offices of DRBFC. In this purpose, the equipment, which is now stored in DRBFC central office, shall be transported to respective local offices. In September 2014, it was decided in Government regulations of Timor-Leste that local road services wouldn't be carried out by the former regional offices of DRBFC (5 places) but new district road

offices (13 places), which will be established in future. However, there aren't any road offices in District level and there aren't any engineers, technicians and other service staff in District level. Then, CDRW recommends that DRBFC should keep the former five (5) regional offices such as Dili, Baucau, Maliana, Same and Oecussi since they have enough facilities and yards and staffs. DRBFC should keep and manage the former regional offices strongly in order to control the District level road services. The respective equipment shall be transported to the respective former regional offices.

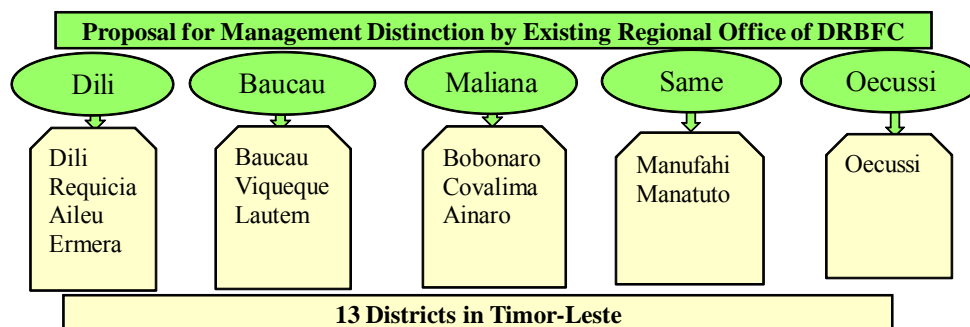
6.2.3 Road maintenance works including road services in Timor-Leste

(1) Routine road patrol and road maintenance works

Routine road condition check and routine road maintenance works (periodical road patrol, periodical road clearance, clearance for side ditches of roads, minor repairing works, etc.) are very important and essential work for proper management of roads. During minor defects conditions of road, minor repairing works is to keep the road conditions with less maintenance cost than the cost after severe damages. In order to execute these routine maintenance works rapidly and properly, equipment is provided to DRBFC by JICA in this time. It is very important to execute continuously the routine maintenance works by DRBFC themselves.

(2) Management of existing former regional offices of DRBFC

Existing former regional offices such as Dili, Baucau, Maliana, Same and Oecussi regional office shall be operated and managed by DRBFC central office. Since there aren't any road offices and staffs in District level at present, former regional offices shall play a role of management offices to control the District level road services. It is proposed that respective former regional offices of DRBFC shall manage respective District level (13 Districts) road services as shown below distinction.



(3) Execution authority of budget for road services

As to execution authority of approved budget for road services, now more than 500 US dollars execution is required to get the approval of Ministry of Finance (MOF) with very complicated administrative procedures. This regulation is one of causes to be difficulty of rapid and proper action for road maintenance works. In order to maintain roads properly

and rapidly, authority for use the budget shall be handled by DRBFC or MPW (for example less than 100,000 US\$ or 50,000 US\$), which is responsible agencies for road maintenance works. It is not problems for only DRBFC, Public Works of MPW and MPW to improve the national regulation for authority of budget execution. However it is necessary to continue the concrete budget request for road maintenance and its certain execution and monitoring based on the road maintenance database and appeal these to MOF. And moreover, it is necessary to appeal the activities of DRBFC to MOF and to make efforts so as to improve the regulation. It is very complicate administrative office work that only MOF has an authority for budget execution, and then, speed of execution will be delayed. Audit system by MOF should be strengthened, on the other hand, authority of budget execution shall be department, divisions or ministry charged in the works.

(4) Road services done by Foreign Donors

It seems that road rehabilitation or improvement works carried out by other international donor agencies (i.e. JICA, ADB, WB, EU, etc.) has been done by agencies themselves mainly. It seems that working together with DRBFC staff is rather difficult for international agencies taking into considerations of daily working volumes of staff in DRBFC and their capability, etc. DRBFC intends to consider that the road service scheduled to be rehabilitated/ improved by the international agency is not necessary to be maintained by DRBFC itself and wait to be carried out by donors. However, places/ sections, which urgent repair/ rehabilitation are required, should be maintained by DRBFC itself aside from the plan done by donors.

ATTACHMENT

ATTCHMENT 3.1

The result of the Training for Upgrade Bridge Register Database

Damages and Problems parts analysis (Baucau regional office)

Bridge No.	Road Name	Bridge Name	KM	Part of Damages					Volume				Picture	Remark
				Side	Part 1	Part 2	Material	Situation	Length (m)	Width (m)	Height/Depth (m)	Nos (m ² or m ³)		
Bcu-006	A01	Ponte juiz	105.1	Upstream,downstream	Superstructure	substructure	stone masonry	scoring,Protection,erosion missing	20	1	2	40	BA 004 PIC1	
Bcu-007	A01	Ponte wallacama	105.8	Downstream	Protection	Guard rail	concrete & steel pipe	Breaking or missing	6	0	0	6	BA 009 OTHERS2	
Bcu-010	A01	Ponte seisal	135.9	Right/left,Upstream,downstream	Protection	Protection	concrete & steel	Fall,erosion,breaking or missing	30	0.8	3	72	BA 007 PIC3	Change material
Bcu-013	A01	Ponte tekinaumata	147.4	Right/left,Upstream,down	Protection	Protection	stone masonry,Gabion	fall,erosion,protection	30	2	3	180	BA 009 OTHERS1	
Bcu-015	A01	Ponte lautem laivai	165.5	right/left,Upstream	Protection	Obstacle	stone masonry,Gabion	fall,erosion breaking or missing,Protection	30	2	3	180	BA 012 PIC2	
Bcu-016	A01	P.Raumoko Lautem	165.8	Downstream,Upstream	No protection	Superstructure	Concrete,Gabion	Protection,erosion	30	1	3	90	BA 013 PIC1	
Bcu-018	A01	P.sika lautem	180.3	Left upstream left downst	No protection	Obstacle	Gabion	Protection	5	1	2	10	BA 013+2 PIC2	
Bcu-019	A01	P.Apikuru Lautem	185.3	Left upstream left downst	No protection	Protection	Gabion	Fall,erosion,breaking or missing	30	1	3	90	BA 014 OTHERS10	
Bcu-022	A06	P.weradek Beloi	0.5	Upstream downstream	Protection	Guard rail	Concrete Pipe	Breaking or missing,Protection	15	0	0	15	BA 032 OTHERS4	
Bcu-023	A06	P.Bascamp bunurak	5.7	Left downstream	Protection	Protection	Concrete & Gabion	Protection,erosion & missing	5	1	1	5	BA 032 OTHERS7	
Bcu-026	A06	P.Loihunu apara (2)	15.7	Upstream, downstream	Protection	Guard rail	Concrete & steel Pipe	Protection,erosion & missing	10	0	0	10	BA 026 PIC1	
Bcu-027	A06	P. Loihunu apara (1)	15.74	Upstream, downstream	Protection	Guard rail	concrete & steel pipe	Protection,erosion & missing	10	0	0	10	BA 025 PIC2	
Bcu-029	A06	P. Waidare ossu	21.4	Downstream,Upstream	Protection	Guard rail	Concrete steel pipe,S.M	Breaking or missing,Protection	25	1	2	50	BA 023 OTHERS4	
Bcu-030	A06	P.Waihua Ossu	21.9	Downstream,Upstream	Substructure	Abutment	concrete	scoring,Protection,crack,erosion	10	2	2	40	BA 022 PIC1	
Bcu-031	A06	P.kampung pasir (3)	21.94	Downstream,Upstream	Substructure	Abutment	Stone masonry wall	scoring,Protection,crack,missing	10	2	2	40	BA 021 OTHERS8	
Bcu-032	A06	P.kampung pasir (2)	22.49	Downstream	Substructure	Abutment	Stone masonry wall	Already repair and finished construct	0	0	0	0	BA 021 OTHERS8	Construction completed
Bcu-034	A06	P.kampung pasir (1)	24.41	Downstream,Upstream	Superstructure	Abutment	Already repair construction	Already repair and finished construct	0	0	0	0	BA 021 OTHERS8	Construction completed
Bcu-036	A06	P.Bualale ossu	39.1	Downstream,Upstream	Protection	Guard rail	Concrete steel pipe,S.M	Breaking,Missing	5	0	0	5	BA 017 OTHERS3	
Bcu-037	A06	P.Assalatlula Builale	40.3	Downstream,Upstream	Protection	Obstacle	Stone masonry,Gabion	Fall,erosion,missing	20	1	3	60	BA 016 OTHERS11	
Bcu-039	A07a	P.Wenua buikarin (1)	9.3	Downstream,Upstream	Protection	Protection	Stone masonry Gabion	fall,erosion,cracking,protection	20	2	3	120	BA 058+2 PIC2	
Bcu-040	A07a	P.Wenua buikarin (2)	9.98	Left upstream	Substructure	Abutmen	Stone masonry Gabion	fall,erosion,cracking,protection	20	2	3	120	BA 058+3 OTHERS1	
Bcu-042	A07a	P.kantor desa Buikarin	14.2	Left upstream,Down stream	Substructure	Abutmen	Stone masonry Gabion	Scoring,cracking,missing	20	1	1	20	BA 058+5 PIC2	
Bcu-044	A07a	P.Wetodo luka	17.2	Left Upstream,Downstream	Substructure	Abutmen	Stone masonry Gabion	Scoring,cracking,protection,fall,erosion	30	2	2	120	BA 058+7 OTHERS1	
Bcu-045	A07a	P.Webalun Luka	17.9	Left Upstream,Downstream	Protection	Protection	Stone masonry Gabion	Protection	15	2	1	30	BA 058+9 OTHERS1	
Bcu-046	A07a	P.Welalikan Luka	18.2	Left Upstr,Downstream	Protection	Protection	Stone masonry Gabion	Protection	20	2	2	80	BA 058+9 OTHERS3	
Bcu-047	A07a	P.Mota luka	23.5	Downstream,Upstream	Protection	Guard rail	Steel	Missing	30	0	0	30	BA 058+9 OTHERS3	
Bcu-049	A07a	P.Wenunuk	36.7	Downstream,Upstream	Protection	Protection	Steel, Stone masonry,Gabio	Protection,Deformation, settlemen	30	1	3	90	BA 058+12 PIC2	
Bcu-051	Ao7a	P.Wefa	37.1	Left Upstream,Downstrea	Protection	Abutment	S.m Gabion	Scoring,crack,erosion	30	2	2	120	BA 058+13 PIC1	
Bcu-050	A07a	P.Mota Dilor	38.3	Upstream,Downstream	Protection	River bad	Reinforcing concrete Steel	Now under construction	0	0	0	0	DILOR UNDER CONST.1	under construction
Bcu-054	A08	P.Sawarika Lospalos	25.4	Downstream,Upstream	Protection	Abutment	Concrete & Stone M.	Breaking or missing,scoring	5	3	2	30	BA 037+4 PIC1	
Bcu-055	A08	P.Lihulu Ilomar	78.8	Left Upstream,Downstream	Substructure	Abutment	Concrete & Stone M. (E)	Fall,erosion,Breaking or missing	7	3	3	63	BA 037 PIC2	
Bcu-057	A08	P.Namanei Ilomar	83.3	Downstream,Upstream	Substructure	Abutment,protection	Concrete, Stone masonry	Erosion,Protection,scoring	10	5	3	150	BA 037+3 OTHERS3	
Bcu-058	A08	P.Marvaluno Ilomar	84.8	Upstream,Downstream	Substructure	Abutment,Protection	Concrete, Stone masonry	Fall,erosion,Breaking or missing	6	5	3	90	BA 037+4 PIC2	
Bcu-059	A08	P.Mauma Ilomar	89.8	Upstream,Downstream	Superstructure	Abutment,protection	Concrete, Stone masonry	Fall, erosion Breaking & missing	20	2	3	120	BA 037+5 PIC1	
Bcu-060	A08	P. Irabere	96.8	Upstream,Downstream	Protection	Truss,Pier	Concrete, Stone masonry	Fall,erosion Breaking & missing	30	1	5	150	BA 037+6 OTHERS14	
Bcu-062	A08	P.Watucarbau kota	100.4	Downstream, Left	Protection	Others	Concrete Stone masonry	Scoring,Breaking,Protection	8	5	3	120	BA 037+8 PIC2	
Bcu-063	A08	P.Laporameta	120.7	Upstream,Downstream	Protection	Guard rail	Steel,pipe protection	Breaking or missing	10	1	1	10	BA 037+9 PIC1	
Bcu-064	A08	P.Kaidilale Watucarbu	120.9	Upstream,Downstream	Protection	Protection	Gabion	Fall,erosion,Breaking or missing	30	1	2	60	BA 037+10 PIC1	
Bcu-068	A08	P. Ailembata	139.3	Downstream	Protection	Protection	Gabion	Protection	8	1	2	16	BA 037+14 OTHERS3	Change material
Bcu-074	A08	P.Miguel makadiki	147.1	Upstream,Downstream	Protection	Others	Stone masonry	Crack, scoring,erosion	5	5	2	50	BA 037+18 PIC1	
Bcu-075	A08	P.Belia Watulari	147.3	Upstream	Protection	Protection	Gabion	Crack, scoring, erosion	10	1	2	20	BA 038 OTHERS4	
Bcu-077	A08	P.Makadiki watulari	149.9	Upstream,Downstream	Substructure	Others	Stone masonry	Crack, scoring,erosion	10	3	2	60	BA 041 PIC1	
Bcu-080	A08	P.Lugasa watudere	150.7	Upstream,Downstream	Substructure	Protection	Stone masonry	Crack, scoring,erosion	10	2	2	40	BA 044 PIC1	
Bcu-081	A08	P.Lugasa	150.9	Upstream,Downstream	Substructure	Protection	Stone masonry	Crack, scoring, erosion	6	3	2	36	BA 045 OTHERS10	
Bcu-082	A08	P.Beasu maluru	152.3	Upstream,Downstream	Protection	Protection	Gabion	Fall,erosion,Breaking or missing	30	2	3	180	BA 046 OTHERS7	
Bcu-083	A08	P.Abat oan beasu	153.9	Upstream,Downstream	Protection	Protection	Stone masonry,Gabion	Scoring,erosion,Breaking or missing	7	2	2	28	BA 048 OTHERS9	
Bcu-084	A08	P.Motabulara ratahu	154	Upstream,Downstream	Protection	Protection	Stone masonry,Gabion	Crack, scoring,breaking,missing	30	1	2	60	BA 049 PIC1	
Bcu-085	A08	P.mota lee ratahu	155.1	Upstream,Downstream	Protection	Protection	Stone masonry,Gabion	Construction completed	0	0	0	0	BA 050 OTHERS14	Repairing completed
Bcu-086	A08	P.Naeboruk vqa	156.1	Downstream	Protection	Protection	Stone masonry,Gabion	Fall,cracking,erosion	5	2	2	20	BA 054 OTHERS5	
Bcu-087	A08	P.Piress vqa kota	159.5	Downstream	Protection	Protection	Gabion, Stone masonry	Erosion,Protection,missing,breaking	30	2	3	180	BA 056 PIC2	

Damage and Problem parts analysis (Same regional office)

Bridge No.	Bridge name	Road Name	km	Side	Part of Damages				Volume				Picture	Remark
					Part 1	Part 2	Material	Situation	Length (m)	Width (m)	Height/Depth (m)	Nos (m ² or m ³)		
A05														
SA-046	Aifefo	A05	1.7	Left Downstream	Protection	Superstructure	Concrete	Fall, erosion, breacking or Missing	6	2	3	36	DSC02818	
				Right	Protection	Superstructure	Guard Rail	Missing	6	2	3	36	DSC02807	
				Left Downstream	Protection	Abutment	Stone Masonry	Crack	2	1	0.025	0.05	DSC02809	
SA-048	Fahi Luhan	A05	20.4	Left Downstream	Substructure	Abutment	Stone Masonry	Scoring	7	5	3	105	DSC02830	
SA-050	Ermeti Bridge	A05	29.4	Left Upstream	Substructure	Abutment	Stone Masonry	Fall, erosion, breacking or Missing	6	2	3	36	DSC02839	
				Left Downstream	Substructure	Substructure	Concrete & Gabion	Crack	6	2	0.025	0.3	DSC02838	
SA-052	Coloco	A05	30.4	Left Downstream	Superstructure	Superstructure	Concrete & steel	Deformation or Settlement	6	5	2	60	DSC02853	
SA-053	Ailoclaran	A05	31.6	Left Downstream	Substructure	Abutment	Stone Masonry	Scoring	6	5	1	30	DSC02871	
				Left Downstream	Substructure	Abutment	Stone Masonry	Scoring	6	5	1	30	DSC02870	
SA-055	Ailoklaran 2	A05	36.8		Substructure	Abutment	Stone Masonry	Scoring	6	6	2	72	DSC02884	
SA-057	Raifusa	A05	50.3	Right	Substructure	Abutment	Stone Masonry	Crack	3	2	0.025	0.15	DSC02900	
SA-058	Raifusa 2	A05	53	Left Downstream	Substructure	Substructure	Concrete	Fall, erosion, breacking or Missing	3	2	3	18	DSC02905	
				Left	Substructure	Guard Rail	Concrete & steel	Missing	6	2	2	24	DSC02904	
A13														
SA-079	Caiseru	A13	22	Left	Substructure	Guard Rail	Concrete	Missing	6	1	2	12	DSC02775	
				Right	Substructure	Guard Rail	Concrete	Missing	6	1	2	12	DSC02776	
				Right Upstream	Substructure	Abutment	Stone Masonry	Crack	2	2	0.025	0.1	DSC02778	
SA-080	Aiassa	A13	24.5		Superstructure	Superstructure	Concrete & steel	Completely Broken(Very Bad)	123	6	4	2952	DSC02783	
					Superstructure	Superstructure	Concrete & steel	Completely broken(Very Bad)	123	6	4	2952	DSC02787	
A14														
SA-081	Betano	A14	0.4	Left Upstream	Substructure	Guard Rail	Concrete & steel	Missing	5	2	2	20	DSC02911	
				Left Downstream	Substructure	Substructure	Concrete	Blocked River	5	3	2	30	DSC02912	
				Right Upstream	Substructure	Protection	Concrete	Protection	5	3	2	30	DSC02915	
SA-083	Betano 2	A14	2.7	Right Downstream	Substructure	Protection	Concrete	Deformation or Settlement	7	3	3	63	DSC02924	
SA-084	selihasan	A14	5.5	Right Upstream	Substructure	Protection	Concrete	Protection	7	3	3	63	DSC02929	
SA-088	Laculo	A14	25.4	Right	Superstructure	Guard Rail	Superstructure	Missing	15	6	3	270	DSC02955	
				Left	Superstructure	Guard Rail	Superstructure	Missing	15	6	3	270	DSC02958	
SA-089	Dotic	A14	29.2	Right	Substructure	Guard Rail	Concrete & steel	Missing	10	5	2	100	DSC02967	
SA-090	Clere	A14	32.5	Left Downstream	Superstructure	Abutment	Concrete	Crack	5	2	0.025	0.25	DSC02985	
SA-091	Clere 2	A14	35	Left Downstream	Substructure	Substructure	Concrete	Deformation or Settlement	5	6	2	60	DSC02990	Need To Clear
SA-092	Caicasa	A14	39.4	Right Upstream	Substructure	Abutment	Stone Masonry	Fall, erosion, breacking or Missing	3	2	2	12	DSC02997	
				Right Downstream	Substructure	Substructure	Stone Masonry	Fall, erosion, breacking or Missing	3	2	1	6	DSC03001	
				Left Upstream	Substructure	Substructure	Stone Masonry	Crack	2	1	0.025	0.05	DSC02998	
SA-093	Sahe	A14	42.6	Right	Superstructure	Guard Rail	Concrete & steel	Missing	90	6	3	1620	DSC03009	
				Left	Superstructure	Guard Rail	Concrete & steel	Missing	60	6	3	1080	DSC03011	
SA-094	Sahe 2	A14	42.9	Right Upstream	Superstructure	Others	Stone Masonry	Scoring	7	2	1	14	DSC03022	
				Right Upstream	Superstructure	Protection	Concrete	Protection	55	6	3	990	DSC03017	
SA-095	Sahe 3	A14	43	Right Downstream	Substructure	Others	Stone Masonry	Scoring	100	6	3	1800	DSC03024	
				Left Downstream	Substructure	Truss	Stone Masonry	Scoring	100	6	3	1800	DSC03026	
				Right Downstream	Substructure	Truss	Stone Masonry	Fall, erosion, breacking or Missing	100	6	3	1800	DSC03025	

Damage and Problem parts analysis (Oecussi regional office)

Bridge No.	Bridge name	Road Name	km	Side	Part of Damages				Volume				Picture	Remark
					Part 1	Part 2	Material	Situation	Length (m)	Width (m)	Height/Depth (m)	Nos (m ² or m ³)		
A17														
OE-001-01	Ponte Padmau	A17	1.7	Left Downstream	Substructure	Curvert	Concrete	Fall, erosion, breacking or Missing	7	2	1	14	OE-001-01-Other1	Need to be clear
				Right Downstream	Substructure	Curvert	Concrete	Fall, erosion, breacking or Missing	6	2	1	12	OE-001-01-Pic.1	
OE-001-02	Ponte Masin	A17	3.4	Left Downstream	Superstructure	Superstructure	Concrete	Deformation or Settlement	4	2	2	16	OE-001-02-Pic.1	
				Right Upstream	Superstructure	Superstructure	Concrete	Crack	4	6	0.025	0.6	OE-001-02-Pic.2	need to repair for crack
OE-001-03	Ponte Samoro	A17	4.3	Left Downstream	Superstructure	Superstructure	Stone Masonry	Deformation or Settlement	2	6	3	36	OE-001-03-Other 2	Need to be clear
OE-001-04	Ponte Padie	A17	9.1	Left Downstream	Superstructure	Superstructure	Stone Masonry	Crack	7	6	0.025	1.05	OE-001-04-Pic.1	need to repair for crack
				Left Downstream	Superstructure	Superstructure	Stone Masonry	Deformation or Settlement	7	6	3	126	OE-001-04-Pic.2	Need to be clear
OE-001-05	Ponte Tono	A17	11.3	Left Downstream	Substructure	Substructure	Stone Masonry	Protection	4	5	2	40	OE-001-05-Pic.1	
				Right Downstream	Substructure	Substructure	Stone Masonry	Protection	4	3	2	24	OE-001-05-Other2	
OE-008	Ponte Oebaho 1	A17	17.2	Right Downstream	Superstructure	Superstructure	Others	Fall, erosion, breacking or Missing	30	3	4	360	OE-001-Pic.2	
				Left Downstream	Superstructure	Superstructure	Others	Scoring	30	6	2	360	OE-001-Pic.2	
OE-009	Ponte Nikuas	A17	25.5	Right Downstream	Protection	Substructure	Stone Masonry	Fall, erosion, breacking or Missing	6	3	3	54	OE-002-01-Pic.2	
A18														
OE-010	Ponte Oebaho 2	A18	0.3	Left Upstream	Substructure	Substructure	Stone Masonry	Fall, erosion, breacking or Missing	2	4.5	2	18	OE-023-Pic.1	
OE-013	Tulaka 2	A18	10.5	Left Downstream	Substructure	Curvert	Others	Blocked River	9	6	2	108	OE-020-Pic.1	Need to be clear
OE-014	Aus - Ero	A18	11.4	Right Downstream	Substructure	Curvert	Others	Blocked River	9	4	3	108	OE-020-01-Pic.1	Need to be clear
				Right Downstream	Substructure	Substructure	Concrete	Scoring	9	4	1	36	OE-020-01-Pic.2	
OE-016	Magur'lab	A18	14.6	Left Upstream	Superstructure	Guard Rail	Superstructure	Missing	5	1	2	10	OE-017-Pic1	
OE-017	Kabuk pala	A18	16.4	Right Downstream	Substructure	Substructure	Concrete	Scoring	6	1	1	6	OE-014-Pic.2	
OE-018	Kabuk pala 2	A18	17.2	Left Downstream	Superstructure	Curvert	Stone Masonry	Blocked River	21	4	3	252	OE-014-01-Other1	Need to be clear
				Right Downstream	Superstructure	Curvert	Stone Masonry	Blocked River	21	4	3	252	OE-014-01-Pic.1	
OE-019	Oe-Nunu	A18	21.5	Left Upstream	Substructure	Substructure	Stone Masonry	Crack	2	2	0.025	0.1	OE-012-Pic.1	
OE-020	Oe-uki	A18	22.4	Left Upstream	Superstructure	Guard Rail	Stone Masonry	Missing	9	1	1	9	OE-011-Pic.1	
				Left Downstream	Substructure	Substructure	Stone Masonry	Scoring	5	1	1	5	OE-011-Pic.1	
				Left Downstream	Substructure	Substructure	Stone Masonry	Crack	2	4.5	0.025	0.225	OE-011-Pic.2	
OE-021	Panom Tosa	A18	23.7	Left Upstream	Substructure	Substructure	Concrete	Crack	6	2	0.025	0.3	OE-011-01-Pic.1	
				Left Downstream	Substructure	Substructure	Concrete & Gabion	Blocked River	5	5	3	75	OE-011-01-Pic.2	Need to be clear
OE-022	Panom Tosa 2	A18	24.6	Right Downstream	Superstructure	Guard Rail	Stone Masonry	Missing	6	2	1	12	OE-009-Pic.1	
				Left Downstream	Substructure	Substructure	Stone Masonry	Blocked River	6	4	2	48	OE-009-Pic.2	Need to be clear
OE-023	Panom Tosa 3	A18	25.2	Left Upstream	Superstructure	Guard Rail	Stone Masonry	Missing	8	2	2	32	OE-009-01-Other1	
				Right Upstream	Superstructure	Guard Rail	Stone Masonry	Missing	8	2	2	32	OE-009-01-Pic.2	
OE-024	Bona 1	A18	28	Left Upstream	Substructure	Guard Rail	Stone Masonry	Missing	9	2	2	36	OE-007-Pic.1	
				Right Upstream	Substructure	Guard Rail	Stone Masonry	Missing	9	2	2	36	OE-007-Other1	
OE-025	Bona 2	A18	30	Left Upstream	Substructure	Guard Rail	Stone Masonry	Missing	6	1	1	6	OE-006-Pic.1	
				Right Upstream	Substructure	Guard Rail	Stone Masonry	Missing	4	1	1	4	OE-006-Pic.2	
OE-026	Baok Nana 3	A18	34	Left Downstream	Substructure	Others	Stone Masonry	Scoring	11	3	2	66	OE-005-Other2	
				Left Upstream	Protection	Protection	Asphalt	Fall, erosion, breacking or Missing	8	8	2	128	OE-005-Other3	
OE-027	Baok Nana 2	A18	35.9	Right Upstream	Superstructure	Guard Rail	Stone Masonry	Missing	5	1	1	5	OE-004-Other2	
A19														
OE-031	SMP S.Antonio	A19	0.3	Left Downstream	Substructure	Substructure	Stone Masonry	Blocked River	6	6	3	108	OE-01-Other1	Need to be clear
				Right Downstream	Substructure	Substructure	Stone Masonry	Blocked River	6	6	3	108	OE-01-Pic.2	Need to be clear
OE-032	Oesono	A19	0.8		Superstructure	Deck Slub	steel	Change material from steel to asphalt concrete	29	5	2	290	OE-028-Pic.2	Change material
OE-033	Oesono 1	A19	1.4	Right Downstream	Substructure	Substructure	Stone Masonry	Scoring	9	2	1	18	OE-027-Pic.2	
OE-034	Nispeno	A19	1.8		Superstructure	Deck Slub	steel	Change material from steel to asphalt concrete	18	5	3	270	OE-026-Pic.1	Change material
OE-035	Sumilli	A19	1.9	Left Downstream	Substructure	Guard Rail	Stone Masonry	Missing	11	6	2	132	OE-025-Pic.1	
OE-036	Mahata	A19	3.3	Right Downstream	Superstructure	Superstructure	Concrete	Deformation or Settlement	11	6	3	198	OE-024-Pic.1	
OE-038	Soin	A19	6.7	Right Downstream	Superstructure	Superstructure	Stone Masonry	Deformation or Settlement	9	5	3	135	OE-030-Pic.2	
OE-040	Sacato Wini	A19	14.6	Left Upstream	Superstructure	Superstructure	Concrete	Deformation or Settlement	20	6	3	360	OE-030-02-Pic.1	

Damage and Problem parts analysis (Maliana regional office)

Bridge No.	Road Name	Bridge Name	KM	Part			Material	Situation	Length (m)	Width (m)	Height/Depth (m)	Nos (m ² or m ³)
				Part 1	Part 2	Part 3						
A02b												
MA-003	A02b	Sarifuk Bridge	7.40	Superstructure	Deck slab		wood	Cracking	30,000	4,000	1,000	120,000
MA-003	A02b	Sarifuk Bridge	7.40	Protection	Upstream	Right Bank	Stone Masonry	No Protection	30,000	4,000	1,000	120,000
MA-003	A02b	Sarifuk Bridge	7.40	Protection	Upstream	Left Bank	Stone Masonry	No Protection	30,000	4,000	1,000	120,000
MA-003	A02b	Sarifuk Bridge	7.40	Protection	downstream	Right Bank	Stone Masonry	No Protection	30,000	4,000	1,000	120,000
MA-003	A02b	Sarifuk Bridge	7.40	Protection	downstream	Left Bank	Stone Masonry	No Protection	30,000	4,000	1,000	120,000
MA-003	A02b	Sarifuk Bridge	7.40	Superstructure	Abutment		Stone Masonry	crack	4,000	1,000	0.025	0.125
MA-005	A02b	Laha Rai Bridge	11,000	Protection	Upstream	Right Bank	Stone Masonry	Deformation or partial loss	5,800	5,000	2,000	59,000
MA-007	A02b	Haa Manu Bridge	14,100	Superstructure	Abutment		Concrete	scoring	153,300	6,100	1,000	935,130
MA-007	A02b	Haa Manu Bridge	14,100	Superstructure	Dier		Concrete	Cracking	153,300	6,100	1,000	935,130
MA-008	A02b	Adam Tuk Bridge	19,000	Protection	Downstream	Left Bank	Stone Masonry	Deformation or partial loss	5,500	3,000	0.025	0.688
MA-010	A02b	Taxhlin Bridge	25,400	Substructure	Abutment		Concrete	Scoring	12,400	6,000	1,000	74,400
MA-012	A02b	Zullo Atas Bridge	30,900	Superstructure	Deck slab		Concrete	Deformation or partial loss	30,200	4,500	1,000	135,900
A03												
MA-018	A03	Sullaran Bridge	93,100	Protection	Upstream	Right Bank	Stone Masonry	No Protection	5,000	5,500	0.025	0.688
MA-018	A03	Sullaran Bridge	93,100	Protection	Upstream	Left Bank	Stone Masonry	No Protection	5,000	5,500	0.025	0.688
MA-018	A03	Sullaran Bridge	93,100	Surrounding	River Bed			River bed rise and Blocked River	5,000	5,500	0.025	0.688
MA-018	A03	Sullaran Bridge	93,100	Surrounding	Obstacle			Blocked River	5,000	5,500	0.025	0.688
MA-018	A03	Misa Bridge	99,500	Substructure	Abutment		Stone Masonry	Scoring	5,200	5,000	1,000	28,000
MA-018	A03	Misa Bridge	99,500	Substructure	Foundation(Base Structure)		Concrete	Scoring	5,000	5,000	1,000	25,000
MA-018	A03	Misa Bridge	99,500	Substructure	Foundation(Base Structure)		Gabion	Scoring	5,000	5,000	1,000	25,000
MA-025	A03	Mota An Border	117,300	Substructure	Abutment		Concrete	Cracking	9,000	5,400	1,000	48,600
MA-025	A03	Mota An Border	117,300	Substructure	Guard Rail			Missing	9,000	5,400	1,000	48,600
MA-026	A03	Mota Marak Bridge	3,500	Substructure	Abutment		Concrete	Cracking	30,000	2,000	1,000	60,000
MA-026	A03	Mota Marak Bridge	3,500	Protection	Upstream	Right Bank	Stone Masonry	No Protection	30,000	2,000	1,000	60,000
MA-026	A03	Mota Marak Bridge	3,500	Protection	Upstream	Left Bank	Stone Masonry	No Protection	30,000	2,000	1,000	60,000
MA-026	A03	Mota Marak Bridge	3,500	Protection	downstream	Right Bank	Stone Masonry	No Protection	30,000	2,000	1,000	60,000
MA-026	A03	Mota Marak Bridge	3,500	Protection	downstream	Left Bank	Stone Masonry	No Protection	30,000	2,000	1,000	60,000
MA-027	A03	Mota Marak Bridge	4,000	Substructure	Abutment		Stone Masonry	Scoring	10,000	3,500	1,000	35,000
MA-027	A03	Mota Marak Bridge	4,000	Protection	Upstream	Right Bank	Stone Masonry	No Protection	10,000	3,500	1,000	35,000
MA-027	A03	Mota Marak Bridge	4,000	Protection	Upstream	Left Bank	Stone Masonry	No Protection	10,000	3,500	1,000	35,000
MA-027	A03	Mota Marak Bridge	4,000	Protection	downstream	Right Bank	Stone Masonry	No Protection	10,000	3,500	1,000	35,000
MA-027	A03	Mota Marak Bridge	4,000	Protection	downstream	Left Bank	Stone Masonry	No Protection	10,000	3,500	1,000	35,000
MA-028	A03	Mota Kekuk Bridge	6,000	Substructure	Abutment		Stone Masonry	Scoring	10,200	6,800	1,000	70,380
MA-028	A03	Mota Kekuk Bridge	6,000	Surrounding	Obstacle			Blocked River	10,200	6,800	1,000	70,380
MA-028	A03	Faa Ren Bridge	21,800	Substructure	Abutment		Concrete	Cracking	14,800	2,000	1,000	29,600
MA-030	A03	Mantendok Bridge	23,700	Substructure	Abutment		Concrete	Cracking	5,000	2,000	2,000	32,000
MA-030	A03	Mantendok Bridge	23,700	Substructure	Foundation(Base Structure)		Concrete	Scoring	5,000	2,000	1,000	10,000
MA-030	A03	Mantendok Bridge	23,700	Substructure	Foundation(Base Structure)		Gabion	Scoring	5,000	2,000	1,000	10,000
MA-030	A03	Mantendok Bridge	23,700	Protection	Upstream	Right Bank	Stone Masonry	No Protection	30,000	2,000	1,000	60,000
MA-030	A03	Mantendok Bridge	23,700	Protection	Upstream	Left Bank	Stone Masonry	No Protection	30,000	2,000	1,000	60,000
MA-030	A03	Mantendok Bridge	23,700	Protection	downstream	Right Bank	Stone Masonry	No Protection	30,000	2,000	1,000	60,000
MA-030	A03	Mantendok Bridge	23,700	Protection	downstream	Left Bank	Stone Masonry	No Protection	30,000	2,000	1,000	60,000
MA-031	A03	Mantendok Bridge	23,700	Substructure	Abutment		Stone Masonry	Scoring	8,000	5,000	2,000	80,000
MA-031	A03	Mantendok Bridge	23,700	Substructure	Foundation(Base Structure)		Concrete	Scoring	5,000	5,000	1,000	25,000
MA-031	A03	Mantendok Bridge	23,700	Substructure	Foundation(Base Structure)		Gabion	Scoring	5,000	5,000	1,000	25,000
MA-032	A03	Nunura Bridge	28,500	Substructure	Abutment		Stone Masonry	Scoring	100,000	2,000	2,000	400,000
MA-032	A03	Nunura Bridge	28,500	Protection	Upstream	Right Bank	Stone Masonry	Deformation or partial loss	10,000	3,500	1,000	35,000
MA-033	A03	Sosoo Bridge	39,200	Substructure	Abutment		Concrete	Deformation or partial loss	62,500	6,100	2,000	762,500
MA-033	A03	Sosoo Bridge	39,200	Surrounding	Plant			Blocked River	62,500	6,100	2,000	762,500
A04												
MA-036	A04	Fatuuroa Bridge	32,300	Substructure	Abutment		Stone Masonry	Scoring	6,500	3,000	1,000	19,500
MA-040	A04	Ermera Muda Bridge	35,100	Substructure	Abutment		Stone Masonry	Cracking	5,700	5,800	1,000	31,920
MA-041	A04	Macten Bridge	37,400	Protection	Upstream	Right Bank	Concrete	Deformation or partial loss	15,000	10,000	1,000	150,000
MA-042	A04	Hombaa Bridge	40,000	Substructure	Abutment		Stone Masonry	Deformation or partial loss	5,000	5,000	2,000	50,000
MA-043	A04	Hombaa Bridge	41,800	Substructure	Deck slab		Concrete	Cracking	5,000	3,000	1,000	15,000
MA-046	A04	Phetrasa Bridge	45,400	Superstructure	Deck slab		Concrete	Cracking	20,000	6,000	2,000	240,000
MA-046	A04	Phetrasa Bridge	45,400	Superstructure	Guard Rail			Missing	20,000	6,000	2,000	240,000
A10												
MA-050	A10	Gouibio Bridge	12,900	Protection	downstream	Right Bank	Stone Masonry	Deformation or partial loss	5,200	3,000	2,000	31,200
MA-052	A10	Bandira Bridge	42,800	Superstructure	Guard Rail			Missing	4,000	2,000	1,000	8,000
MA-057	A10	Tadass Bridge	61,600	Superstructure	Guard Rail			Missing	6,700	4,500	2,000	60,300
MA-057	A10	Tadass Bridge	61,600	Superstructure	Foundation(Base Structure)		Concrete	Scoring	5,000	4,500	1,000	22,500
MA-057	A10	Tadass Bridge	61,600	Superstructure	Foundation(Base Structure)		Gabion	Scoring	5,000	4,500	1,000	22,500
MA-057	A10	Tadass Bridge	61,600	Protection	Upstream	Left Bank	Stone Masonry	Deformation or partial loss	10,000	2,000	1,000	20,000
MA-058	A10	Fafuk Hun Bridge	62,200	Protection	Upstream	Right Bank	Stone Masonry	No Protection	7,200	4,700	1,000	33,840
MA-058	A10	Fafuk Hun Bridge	62,200	Protection	Upstream	Left Bank	Stone Masonry	No Protection	10,000	2,000	1,000	20,000
MA-058	A10	Fafuk Hun Bridge	62,200	Protection	downstream	Left Bank	Stone Masonry	No Protection	10,000	2,000	1,000	20,000
MA-059	A10	Lual Bai Bridge	62,500	Superstructure	Deck slab		Concrete	Deformation or partial loss	5,200	1,000	1,000	5,200
MA-061	A10	Bia Moas Bridge	64,100	Substructure	Guard Rail			Missing	6,000	0,300	1,000	1,800
MA-063	A10	Teba Bui Bridge	68,100	Substructure	Foundation(Base Structure)		Concrete	Scoring	5,000	4,000	1,000	20,000
MA-063	A10	Teba Bui Bridge	68,100	Substructure	Foundation(Base Structure)		Gabion	Scoring	5,000	4,000	1,000	20,000
MA-063	A10	Teba Bui Bridge	68,100	Protection	Upstream	Right Bank	Stone Masonry	No Protection	10,000	2,000	1,000	20,000
MA-063	A10	Teba Bui Bridge	68,100	Protection	Upstream	Left Bank	Stone Masonry	No Protection	10,000	2,000	1,000	20,000
MA-017	A10	Teba Bui Bridge	69,100	Substructure	Guard Rail			Missing	12,000	0,300	1,000	3,600
MA-017	A10	Teba Bui Bridge	69,100	Protection	Upstream	Right Bank	Stone Masonry	No Protection	10,000	2,000	1,000	20,000
MA-017	A10	Teba Bui Bridge	69,100	Protection	Upstream	Left Bank	Stone Masonry	No Protection	10,000	2,000	1,000	20,000
MA-017	A10	Teba Bui Bridge	69,100	Protection	downstream	Right Bank	Stone Masonry	No Protection	10,000	2,000	1,000	20,000
MA-017	A10	Teba Bui Bridge	69,100	Protection	downstream	Left Bank	Stone Masonry	No Protection	10,000	2,000	1,000	20,000
MA-065	A10	Santaba Bridge	11,500	Protection	Upstream	Right Bank	Stone Masonry	No Protection	15,000	2,000	2,000	60,000
MA-065	A10	Santaba Bridge	11,500	Protection	Upstream	Left Bank	Stone Masonry	No Protection	15,000	2,000	2,000	60,000
MA-065	A10	Santaba Bridge	11,500	Protection	downstream	Right Bank	Stone Masonry	No Protection	15,000	2,000	2,000	60,000
MA-065	A10	Santaba Bridge	11,500	Protection	downstream	Left Bank	Stone Masonry	No Protection	15,000	2,000	2,000	60,000
A11												

Damage and Problem parts analysis (Maliana regional office)

MA	Code	Name	km	Part 1	Part 2	Part 3	Material	Situation	Length (m)	Width (m)	Height/Depth (m)	Nos (m ² or m ³)
MA-066	A11	Santabe Bridge I	11.600	Substructure	Abutment		Concrete	Deformation or partial loss	30.000	4.000	1.000	120.000
MA-067	A11	Santabe Bridge II	11.700	Substructure	Others		Concrete	Deformation or partial loss	30.000	2.200	1.000	86.000
MA-067	A11	Santabe Bridge II	11.700	Substructure	Abutment		Stone Masonry	Deformation or partial loss	30.000	2.200	1.000	86.000
MA-067	A11	Santabe Bridge II	11.700	Protection	Upstream	Right Bank	Stone Masonry	No Protection	30.000	1.000	4.000	120.000
MA-067	A11	Santabe Bridge II	11.700	Protection	Upstream	Left Bank	Stone Masonry	No Protection	30.000	1.000	4.000	120.000
MA-067	A11	Santabe Bridge II	11.700	Protection	Downstream	Right Bank	Stone Masonry	No Protection	30.000	1.000	4.000	120.000
MA-067	A11	Santabe Bridge II	11.700	Protection	Downstream	Left Bank	Stone Masonry	No Protection	30.000	1.000	4.000	120.000
MA-068	A11	Miau Bridge	17.500	Protection	downstream	Right Bank	Stone Masonry	Deformation or partial loss	10.000	2.000	3.000	60.000
MA-069	A11	Santabe Bridge	17.600	Protection	Upstream	Right Bank	Stone Masonry	No Protection	10.000	2.000	3.000	60.000
MA-069	A11	Santabe Bridge	17.600	Protection	Upstream	Left Bank	Stone Masonry	No Protection	10.000	2.000	3.000	60.000
MA-069	A11	Santabe Bridge	17.600	Protection	Downstream	Right Bank	Stone Masonry	No Protection	10.000	2.000	3.000	60.000
MA-069	A11	Santabe Bridge	17.600	Protection	Downstream	Left Bank	Stone Masonry	No Protection	10.000	2.000	3.000	60.000
MA-069	A11	Santabe Bridge	17.600	Substructure	Foundation(Base Structure)		Concrete	Scouring	5.000	1.800	1.000	9.000
MA-069	A11	Santabe Bridge	17.600	Surrounding	Plant		Gabion	Scouring	5.000	1.800	1.000	9.000
MA-073	A11	Kala Bridge	21.200	Protection	Upstream	Right Bank	Stone Masonry	No Protection	10.000	2.000	3.000	60.000
MA-073	A11	Kala Bridge	21.200	Protection	Upstream	Left Bank	Stone Masonry	No Protection	10.000	2.000	3.000	60.000
MA-073	A11	Kala Bridge	21.200	Protection	Downstream	Right Bank	Stone Masonry	No Protection	10.000	2.000	3.000	60.000
MA-073	A11	Kala Bridge	21.200	Protection	Downstream	Left Bank	Stone Masonry	No Protection	10.000	2.000	3.000	60.000
MA-073	A11	Kala Bridge	21.200	Surrounding	Plant		Concrete	Blocked River	6.000	2.000	3.000	36.000
MA-074	A11	Pasausti Bridge	29.000	Substructure	Abutment		Stone Masonry	Scouring	8.000	4.000	0.500	17.200
MA-076	A11	Tata Bridge	35.200	Substructure	Guard Rail			Missing	8.000	2.000	1.000	16.000
MA-077	A11	Fatudosor Bridge	41.000	Substructure	Guard Rail			Missing	14.700	3.800	0.500	27.930
MA-077	A11	Fatudosor Bridge	41.000	Substructure	Abutment		Stone Masonry	Scouring	8.000	2.000	1.000	10.000
MA-078	A11	Mailura Bridge	41.900	Substructure	Foundation(Base Structure)		Concrete	Scouring	5.000	45.000	1.000	225.000
MA-078	A11	Mailura Bridge	41.900	Substructure	Foundation(Base Structure)		Gabion	Scouring	5.000	45.000	1.000	225.000
MA-079	A11	Al Bota Bridge	44.000	Substructure	Foundation(Base Structure)		Concrete	Scouring	5.000	4.500	1.000	22.500
MA-079	A11	Al Bota Bridge	44.000	Substructure	Foundation(Base Structure)		Gabion	Scouring	5.000	4.500	1.000	22.500
MA-080	A11	Asumaran Bridge	46.900	Substructure	Guard Rail			Missing	5.700	1.000	0.300	1.710
MA-080	A11	Asumaran Bridge	46.900	Substructure	Foundation(Base Structure)		Concrete	Scouring	5.000	1.000	1.000	5.000
MA-080	A11	Asumaran Bridge	46.900	Substructure	Foundation(Base Structure)		Gabion	Scouring	5.000	1.000	1.000	5.000
MA-081	A11	Behau Bridge	47.100	Substructure	Foundation(Base Structure)		Concrete	Scouring	5.000	2.000	1.000	10.000
MA-081	A11	Behau Bridge	47.100	Substructure	Foundation(Base Structure)		Gabion	Scouring	5.000	2.000	1.000	10.000
MA-082	A11	Lesito Bridge	53.200	Substructure	Foundation(Base Structure)		Concrete	Scouring	5.000	0.200	1.000	1.000
MA-082	A11	Lesito Bridge	53.200	Substructure	Foundation(Base Structure)		Gabion	Scouring	5.000	0.200	1.000	1.000
MA-083	A11	Lesito Bridge	53.400	Surrounding	Plant			Blocked River	6.300	0.500	1.000	3.150
MA-083	A11	Lesito Bridge	53.400	Substructure	Foundation(Base Structure)		Concrete	Scouring	5.000	0.500	1.000	2.500
MA-083	A11	Lesito Bridge	53.400	Substructure	Foundation(Base Structure)		Gabion	Scouring	5.000	0.500	1.000	2.500
MA-084	A11	Lezemeta Bridge	55.300	Substructure	Abutment		Concrete	Deformation or partial loss	4.500	1.000	1.000	4.500
MA-084	A11	Lezemeta Bridge	55.300	Substructure	Foundation(Base Structure)		Concrete	Deformation or partial loss	4.500	1.000	1.000	4.500
MA-084	A11	Lezemeta Bridge	55.300	Substructure	Foundation(Base Structure)		Gabion	Deformation or partial loss	4.500	1.000	1.000	4.500
MA-084	A11	Lezemeta Bridge	55.300	Protection	Upstream	Right Bank	Stone Masonry	No Protection	10.000	2.000	3.000	60.000
MA-084	A11	Lezemeta Bridge	55.300	Protection	Upstream	Left Bank	Stone Masonry	No Protection	10.000	2.000	3.000	60.000
MA-085	A11	Lezemeta Bridge	55.400	Substructure	Foundation(Base Structure)		Concrete	Deformation or partial loss	5.000	1.000	1.000	5.000
MA-085	A11	Lezemeta Bridge	55.400	Substructure	Foundation(Base Structure)		Gabion	Deformation or partial loss	5.000	1.000	1.000	5.000
MA-087	A11	Vila Maria Bridge I	59.400	Substructure	Abutment		Concrete	Deformation or partial loss	4.800	2.000	1.000	9.600
MA-088	A11	Vila Maria Bridge II	59.300	Substructure	Foundation(Base Structure)		Concrete	Deformation or partial loss	5.000	2.000	1.000	10.000
MA-088	A11	Vila Maria Bridge II	59.300	Substructure	Foundation(Base Structure)		Gabion	Deformation or partial loss	5.000	2.000	1.000	10.000
MA-088	A11	Vila Maria Bridge II	59.300	Surrounding	Plant			Blocked River	12.000	2.000	1.000	24.000
MA-088	A11	Vila Maria Bridge II	59.300	Substructure	Abutment		Concrete	Scouring	12.000	2.000	1.000	24.000
MA-090	A12	Huluhai Bridge	0.200	Protection	Upstream	Right Bank	Stone Masonry	Cracking	5.000	0.500	1.000	2.500
MA-090	A12	Huluhai Bridge	0.200	Protection	Upstream	Left Bank	Stone Masonry	Cracking	5.000	0.500	1.000	2.500
MA-090	A12	Huluhai Bridge	0.200	Protection	Downstream	Right Bank	Stone Masonry	No Protection	5.000	0.500	1.000	2.500
MA-090	A12	Huluhai Bridge	0.200	Protection	Downstream	Left Bank	Stone Masonry	No Protection	5.000	0.500	1.000	2.500
MA-092	A12	Lesop Bridge	17.300	Substructure	Foundation(Base Structure)		Concrete	Scouring	5.000	0.200	1.000	1.000
MA-092	A12	Lesop Bridge	17.300	Substructure	Foundation(Base Structure)		Gabion	Scouring	5.000	0.200	1.000	1.000
MA-094	A12	Lesop Bridge	18.300	Protection	Upstream	Right Bank	Stone Masonry	Cracking	6.000	2.000	1.000	12.000
MA-094	A12	Lesop Bridge	18.300	Protection	Upstream	Left Bank	Stone Masonry	Cracking	6.000	2.000	1.000	12.000
MA-099	A12	Kampung Baru Bridge	43.700	Substructure	Foundation(Base Structure)		Concrete	Deformation or partial loss	5.000	2.000	1.000	10.000
MA-099	A12	Kampung Baru Bridge	43.700	Substructure	Foundation(Base Structure)		Gabion	Deformation or partial loss	5.000	2.000	1.000	10.000
MA-100	A12	Gaisuku Bridge I	44.700	Substructure	Foundation(Base Structure)		Concrete	Deformation or partial loss	5.000	2.000	1.000	10.000
MA-100	A12	Gaisuku Bridge I	44.700	Substructure	Foundation(Base Structure)		Gabion	Deformation or partial loss	5.000	2.000	1.000	10.000
MA-103	A12	Buaira Bridge	51.500	Substructure	Foundation(Base Structure)		Concrete	Scouring	5.000	2.000	1.000	10.000
MA-103	A12	Buaira Bridge	51.500	Substructure	Foundation(Base Structure)		Gabion	Scouring	5.000	2.000	1.000	10.000
MA-104	A15	Saile bot Bridge	0.800	Protection	Upstream	Right bank	Stone masonry	Deformation or partial loss	10.000	2.000	1.000	20.000
MA-104	A15	Saile bot Bridge	0.800	Protection	Upstream	Left bank	Stone masonry	Deformation or partial loss	10.000	2.000	1.000	20.000
MA-104	A15	Saile bot Bridge	0.800	Protection	Downstream	Right bank	Stone masonry	Deformation or partial loss	10.000	2.000	1.000	20.000
MA-104	A15	Saile bot Bridge	0.800	Protection	Downstream	Left bank	Stone masonry	Deformation or partial loss	10.000	2.000	1.000	20.000
MA-105	A15	Mata air Bridge	0.800	Protection	Upstream	Right bank	Stone Masonry	Deformation or partial loss	10.000	2.000	1.000	20.000
MA-105	A15	Mata air Bridge	0.800	Protection	Upstream	Left bank	Stone Masonry	Deformation or partial loss	10.000	2.000	1.000	20.000
MA-105	A15	Mata air Bridge	0.800	Protection	Downstream	Right bank	Stone Masonry	Deformation or partial loss	10.000	2.000	1.000	20.000
MA-105	A15	Mata air Bridge	0.800	Protection	Downstream	Left bank	Stone Masonry	Deformation or partial loss	10.000	2.000	1.000	20.000
MA-106	A15	Lokuu Bridge	1.800	Protection	Upstream	Right bank	Stone Masonry	Cracking	10.000	2.000	1.000	20.000
MA-106	A15	Lokuu Bridge	1.800	Protection	Upstream	Left bank	Stone Masonry	Cracking	10.000	2.000	1.000	20.000
MA-106	A15	Lokuu Bridge	1.800	Protection	Downstream	Right bank	Stone Masonry	Cracking	10.000	2.000	1.000	20.000
MA-106	A15	Lokuu Bridge	1.800	Protection	Downstream	Left bank	Stone Masonry	Cracking	10.000	2.000	1.000	20.000
MA-107	A15	Busa kulum Bridge	4.900	Superstructure	Deck slab		Concrete	Cracking	30.000	3.000	2.000	180.000
MA-107	A15	Busa kulum Bridge	4.900	Superstructure	Deck slab		Concrete	Cracking	30.000	3.000	2.000	180.000
MA-107	A15	Busa kulum Bridge	4.900	Superstructure	Deck slab		Concrete	Cracking	30.000	3.000	2.000	180.000
MA-110	A15	Faiuk aan Bridge	8.700	Superstructure	Quinert		Concrete	Deformation or partial loss	6.000	1.000	1.000	6.000
MA-110	A15	Faiuk aan Bridge	8.700	Superstructure	Quinert		Concrete	Deformation or partial loss	6.000	1.000	1.000	6.000
MA-110	A15	Faiuk aan Bridge	8.700	Superstructure	Quinert		Concrete	Deformation or partial loss	6.000	1.000	1.000	6.000
MA-110	A15	Faiuk aan Bridge	8.700	Superstructure	Quinert		Concrete	Deformation or partial loss	6.000	1.000	1.000	6.000

Damage and Problem parts analysis (Dili regional office)

Bridge No.	Part of Damages					Volume						
	Bridge name	Road Name	km	Part 1	Part 2	Part 3	Material	Situation	Length (m)	Width (m)	Height/Depth (m)	Nos (m ² or m ³)
DI-096	Manatuto	A09	6	Substructure	Others		Stone Masonry	Scouring	5	4	1	20
DI-099	Kribas	A09	27,6	Substructure	Foundation(base Structure)		Concrete	Scouring	5	5	1	25
DI-100	Kribas	A09	28	Protection	Downstream	Right bank	Stone Masonry	Cracking,deformation or partial loss	26,5	2	3	159
DI-101	Kribas	A09	31,3	Surrounding	Plant			Blocked River	7	6	1	42
DI-102	Kribas	A09	31,4	Surrounding	Plant			Blocked River	6,5	6	1	39
DI-103	Kribas	a09	32,8	Superstructure	Guard Rail			Missing	12			0
DI-037	Darfeu	A02a	19,8	Surrounding	Plant			Blocked River	16	7	1	112

ATTCHMENT 4.1

Achievement List for the Equipment supplied by JICA

Supplied Equipment (as of September 2014)

No.	Equipment	Q'ty	Arrival Date	Check Date	Place	Use/ Management Condition
1	Movable Asphalt Sprayer with kettle	5 Nos.	August 21	August 22	DRBFC/Logistic	Local office and central office shall submit the request letter for usage for the approval of the Director
2	Asphalt Cutter	10 Set	August 21	August 22	DRBFC/Logistic	Local office and central office shall submit the request letter for usage for the approval of the Director
3	Plate Compactor	10 Nos.	August 21	August 22	DRBFC/Logistic	Local office and central office shall submit the request letter for usage for the approval of the Director
4	Tamping Rammer	10 Nos.	August 21	August 22	DRBFC/Logistic	Local office and central office shall submit the request letter for usage for the approval of the Director
5	Concrete Breaker	5 Nos.	August 21	August 22	DRBFC/Logistic	Local office and central office shall submit the request letter for usage for the approval of the Director
6	Leveling Instrument	5 Set	August 21	August 22	DRBFC/Logistic	Local office and central office shall submit the request letter for usage for the approval of the Director
7	Total Station	5 Set	August 21	August 22	DRBFC/Logistic	Local office and central office shall submit the request letter for usage for the approval of the Director
8	GPS Instrument	5 Nos.	August 21	August 22	DRBFC/Logistic	Local office and central office shall submit the request letter for usage for the approval of the Director
9	Truck with Crane	5 Nos.	September 4	September 4	DRBFC/Logistic	Local office and central office shall submit the request letter for usage for the approval of the Director

ATTCHMENT 5.1

Minutes of Meeting/Attendant List for First Technical Working Group Meeting

*The Project for the Capacity Development of
Road Works in the Democratic Republic of Timor-Leste 4th Year)
(CDRW)*

Minutes of Meeting
for First Technical Working Group Meeting (TWG-1)

Date and time : July 4th, 2014 from 10:30 – 12:00 p.m.

Place of Meeting : Conference Room of DRBFC, MPW

Participants : Chief of Planning and Program, DRBFC, C/P Staff of DRBFC, JICA
Expert of MPW, CDRW Expert

Agenda : 1) Activities for the 4th Year of CDRW
2) Improvement of the bridge database
3) Question and Answer with free discussion style

First Technical Working Group Meeting (TWG-1) was started at 10:30 a.m. by the chairman Joao Gama (in behalf of Eng. Rui Hernani F Gutterres Director EPCC, MPW and Mr. Jose G.R. Piadade, Director General of Ministry of Public Works)

After opening address by the chairman, according to above agenda, Experts of CDRW made a presentation with question-and-answer session. Based on discussion, following matters was confirmed between the members of TWG-1.

Matters discussed and Approved on TWG-1

- (1) Activities for the 4th Year of CDRW
 1. Support to enhance the Bridge Resister Database
 2. Training and instruction on proper use of the equipments
 3. Promotion of the effects for Overall program through Sharing Project Achievements
- (2) Improvement of the bridge resister database
 1. Approach and methodology for improvement of the Database

2. Schedule

- Develop Collaborative work Expert of CDRW with DRBFC staffs (July 2014) at office
 - Site survey and Summarizing budgeting work including MPW opinions and requests (End of August to Middle of September 2014)
3. Expert share the result specially with Department of Planning/Program and Operation/Maintenance
4. CDRW expert submit the request letter for collaborative work with DRBFC (DNEPCC) staffs list.



Mr. Joao Gama
Chief of Department of Planning
and Program, DRBFC

for 青山 治彦 Hamhito AOYAMA







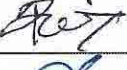










Mr. Koji NAITO
Team Leader of JICA Experts
*The Project for the Capacity
Development of Road Works(4th Year)*

List of Attendant

Title : Bridge Register Database Updating Work on CDRW

Place : Meeting Room of DRBFC

Date/Time : Friday July 4, 2014, 10:00 am – 12:00 pm

No	Name	Designation	Signature
1	JULITO PEREIRA	DRBFC	
2	JOAQUIM da costa	DRBFC	
3	Josafina Josefa usfinit	DRBFC	
4	Luis sarmento da Cruz	DRBFC	
5	ROBERTO DA COSTA FREITAS	PLANING ROOM	
6	ALTINO FERNANDES DA COSTA	DNEPCC - MOP	
7	RUI VICENTE	DNEPCC - MOP	
8	Sabino De Jesus Lobato	DNEPCC - MOP	
9	AGOSTINHO DE ARAUJO - DNEPCC - DATA BASE		
10	ALFONSO E. dos Santos	DNEPCC - MOP	
11	NELSON AMARAL ARAUJO	DRBFC	
12	SIMAO C. LARAIA JUNIOR	DNEPCC	
13	JOÃO SAMPA	DNEPCC	
14	LETIGIA CORBAFO	DNEPCC	
15	Yukihiro Tateyama	JICA and DRBFC	
16	AGUS. SUKOSO	PSU - MOP	
17	FAHEEM EQBALI	GIS / DNEPCC	
18	Haruhiko AOYAMA	CDRW	青山治彦
19			
20			

ATTCHMENT 5.2

Minutes of Meeting/Attendant List for Second Technical Working Group Meeting

**MINUTES OF MEETING
OF
NO.2 TECHNICAL WORKING GROUP MEETING (TWGM-2)
FOR
THE PROJECT FOR THE CAPACITY DEVELOPMENT OF ROAD WORKS (4th Year)
IN
THE DEMOCRATIC REPUBLIC OF TIMOR-LESTE
(CDRW-4)**

- Date & Time : September 18, 2014, 10:00 a.m. – 11:30 a.m.
- Place of Meeting : Conference Room of DRBFC, Rai Kotuk, MPW
- Participants : DG for Public Works (PM), Directors of DRBFC, Chief of Dep. of Operation & Maintenance, Chief of Dep. of Planning and Program, and other Chief of DRBFC, JICA Expert for DRBFC, R4D Expert, Experts of CDRW and other C/Ps for CDRW, which are more than 30 participants; See attached participants list
- Agenda : 1) Opening address by the chairman (by PM), DG for MPW
2) Explanation of the progress for CDRW-4 (by Expert)
3) Explanation of the upgraded bridge register database (by Expert)
4) Explanation for the equipment supplied by JICA and training progress to staff of DRBFC (by Expert)
5) Any other issues when necessary
6) Questions and answers
7) Closing address by the chairman

No.2 Technical Working Group Meeting (TWGM - 2) for CDRW-4 was opened at 10:00 a.m. by the chairman, Mr. Jose G.R.C. Piedade, General Directorate for Public Works, MPW, Project Manager of CDRW.

After opening address by the chairman, CDRW Experts explained the outline/progress of CDRW-4, the upgraded bridge register database and the equipment supplied by JICA how to use the equipment properly, by using the power point.

Since there aren't any other issues asking from any attendances on this meeting, questions and answers proceeded between all attendances of TWGM-2 for CDRW-4.

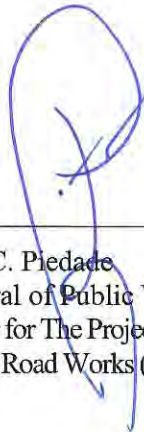
Based on the explanations and discussions, members of Technical Working Group of CDRW and participants of TWGM-2 confirmed the following matters pertaining to activities and issues and schedule on CDRW-4.

**Matters Discussed and Accepted by No.2 Technical Working Group Meeting for
CDRW-4 (TWGM-2)**

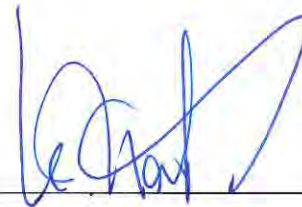
1. All members of Technical Working Group and attendances of the meeting confirmed contents of activities on the Project for Capacity Development of Road Works (CDRW-4) in Timor-Leste and confirmed that activity progress of CDRW-4 was on schedule.

2. Expert from R4D by ILO asked the equipment for routine maintenance works is scheduled to be used by DRBFC staff themselves as same methods as bridge register database that can be handled by DRBFC staff themselves. The Expert of CDRW replied as follows:
 - a) Routine maintenance works is necessary to be carried out quickly when the damaged points are found at national road. Quick action for dealing with the defect places as routine maintenance works (minor repairing works) will be required by carrying out DRBFC local offices with the equipment supplied by JICA by using their budget. This system shall be constructed in DRBFC as possible as they can.
 - b) In case of using the small local contractors and community base contracts for routine maintenance works (minor repairing works), in order to heighten the quality of works some equipment can be lent to the community or small local contractor with a full management/ responsibility of DRBFC local office.
3. Some attendance reported as to damage places of bridges, especially damages on left or right side of main span of bridge since the flood flow passed through right or left side of bridge, which is backside of the abutment of bridge. CDRW Expert well understood his reports and repairing cost by upgraded bridge register database has been done with careful attention for the above issues.

After constructive discussions, No.2 Technical Working Group Meeting (TWGM-2) for CDRW-4 was closed by General Directorate for Public Works, MPW, PM of CDRW, with thankfulness for CDRW activities and hoping to continue the Project with same style as CDRW.



Mr. Jose G.R.C. Piedade
Director General of Public Works, MPW
Project Manager for The Project for the Capacity
Development of Road Works (CDRW)



Mr. Koji Naito
Team Leader of the JICA Experts,
The Project for the Capacity Development of
Road Works (CDRW)



CDRW



LIST OF ATTENDANT
FOR
NO.2 TECHNICAL WORKING GROUP MEETING (TWGM-2)

Title : No.2 Technical Working Group Meeting (TWGM-2)
Place : Conference Room of DRBFC, MPW
Date / Time : September 18 (Thursday), 2014, 10:00 to 11:30 a.m.

NO	NAME	DESIGNATION/POSITION	SIGNATURE
1	Armando Gama	DEP. PROJETOS	
2	Hiroyuki AOYAMA	CDRW	
3	S. FAHEEM EQBALI	GIS SECTION / DNEPCC	
4	Marinho Ribeiro	tree	
5	PEDRO ALEXANDRE	RE. BAUCAU.	
6	NENE LOBATO	RE. SAME	
7	GERALDO LEMOS	RE. dil.	
8	CLEO XIMENES	Reg. di CI / supervisor	
9	JOAO GREGORIO DE C.	CENTRAL	
10	Astrão Vieira	U	
11	Juliana Pereira	- K	
12	Estevão da Cunha	- K	
13	Francisco B. Gama	- K	
14	ANTONIO DE A.	DEP MANUTENCAO	
15	JOAO GAMA	DEP. PROJETOS	
16	Yukihiro Tateyama	JICA Advisor	
17	Julio Pereira	Diretor DRBFC	
18	MILTON K. M	MOP	
19	Sertório P.	Epre	
20	Leopoldino R	Epre	



CDRW



LIST OF ATTENDANT FOR NO.2 TECHNICAL WORKING GROUP MEETING (TWGM-2)

Title : No.2 Technical Working Group Meeting (TWGM-2)
 Place : Conference Room of DRBFC, MPW
 Date / Time : September 18 (Thursday), 2014, 10:00 to 11:30 a.m.

NO	NAME	DESIGNATION/POSITION	SIGNATURE
1	Julius L. Kahy	Dep. Projeto / Eng.	
2	AGATA M. O. ALVES	Dep. Projeto / Eng	
3	Angelo Ribeiro	Dep. Cop. Exterior	
4	Osante X.	Dep. Manutenção	
5	Luiz Henrique Luis	Dp - Planejamento	
6	Azofeixo Afonso de	Dep. Reg. Dili	
7	Heitor Helder da Cruz	Reg. Supervisor	
8	Jan Baber	Central office	
9	João Pedro Amador	Head Maint. Dept	
10	Devi Emanuel	Reg. Supervisor	
11	Rui HERASTANI	AN EPC	
12	Nelson A. Araújo	EPC	
13	Collins Makonjwa (Mako)	R&D/ICD Planning + Training	
14	Jose Medade	DE OP	
15	Kopu NAITO	CDRW-4	
16	Nobuyuki Kurihara	CDRW-4	
17			
18			
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ATTCHMENT 5.3

Minutes of Meeting/Attendant List for Joint Coordinating Committee Meeting

**MINUTES OF MEETING
OF
JOINT COORDINATING COMMITTEE (JCC) MEETING
FOR
THE PROJECT FOR THE CAPACITY DEVELOPMENT OF ROAD WORKS (4th Year)
IN
THE DEMOCRATIC REPUBLIC OF TIMOR-LESTE
(CDRW-4)**

- Date & Time : September 30, 2014, 14:30 p.m. – 16:00 a.m.
- Place of Meeting : Conference Room of MPW, Mandarin, Dili
- Participants : DG for Public Works (PM), DG for Corporate Services, Directors of DRBFC, Chiefs of respective Departments of DRBFC, JICA Chief Representative and Staff, JICA Expert for DRBFC, R4D Expert, PMU staff for JICA Loan Project, Experts of CDRW and other C/Ps for CDRW, which are more than 20 participant; See attached participants list
- Agenda : 1) Opening address by the chairman (by PM), DG for MPW
2) Explanation of the outline/achievement for CDRW-4 including recommendation (by Expert)
3) Explanation of the equipment supplied by JICA (by Expert)
4) Any other issues when necessary
5) Questions and answers
6) Address by Chief Representative of JICA Timor-Leste, and Closing address by the chairman

Joint Coordinating Committee Meeting for CDRW-4 was opened at 14:30 p.m. by the chairman, Mr. Jose G.R.C. Piedade, General Directorate for Public Works, MPW, Project Manager of CDRW.

After opening address by the chairman, CDRW Experts explained the outline/achievement of CDRW-4 including recommendations on CDRW-4 and the equipment supplied by JICA how to use the equipment properly, by using the power point.

Since there aren't any other issues asking from any attendances on this meeting, questions and answers proceeded between all attendances.

Based on the explanations and discussions, members of JCC and participants of JCC meeting confirmed the following matters pertaining to activities and issues on CDRW-4.

Matters Discussed and Accepted by Joint Coordinating Committee (JCC)

Meeting for CDRW-4

1. All members of JCC and attendances of the meeting confirmed contents of activities on the Project for the Capacity Development of Road Works, 4th Year, (CDRW-4) in Timor-Leste and confirmed that activities of CDRW-4 was as scheduled.
2. Expert from R4D Project by ILO asked the priority of bridge rehabilitation works should be considered, and standards for replacement of old bridges shall be decided. The Expert of CDRW and PM replied as follows:
 - a) Of course, priority for bridge rehabilitation works will be considered by DRBFC in a limited budget after all required cost will be roughly estimated by using the bridge register database.
 - b) Standard for replacement of old bridges is mentioned in the guideline of bridge register database which was already submitted to DRBFC in September 2014.
3. JICA Expert informed that the bridge position indicated in the bridge register database will be marked near future on the map of 1/50,000. And he also asked that ADB project for A03 and WB project for AO2 shall be provided the mile stone along the rehabilitated roads. The Expert of CDRW replied:
 - a) In future or the next capacity development project for road development, if possible, it is more convenient that the data in the DB linked to the map of 1/50,000 of Timor-Leste.
 - b) Mile stones are important for road maintenance works and beginning point for A02 and A03 shall be at the front of Palacio where is the beginning point of Km post set in 2005 for road maintenance database.
4. JICA staff asked why updating work for the road maintenance database was not conducted in this year by DRBFC. Director of DRBFC replied:


- a) DRBFC itself was very busy in this year for shifting the office to Rai Kotuk from Mandarin and etc.
- b) DRBFC will try to conduct the updating work of the road maintenance database in every year just after rainy season for budget estimation of next fiscal year.
- c) Since bridges are very important facilities on roads, inspection patrol for bridges are necessary to be carried out appropriately and timely.

After constructive discussions, Chief Representative of JICA Timor-Leste addressed i) importance of proper usage of equipment for routine road maintenance works, ii) road maintenance database and bridge register database are very useful and effective tools for accurate budget request from DRBFC and publicities of the DBs to other ministries, departments and foreign Agencies are also important, iii) the capacity development project for road sector will be re-started again near future and iv) appreciation to DRBFC and MPW for continuous cooperation to JICA Project and CDRW.

After Chief Representative addressed concerning to JICA/ CDRW activities, then, JCC Meeting for CDRW-4 was closed by General Directorate for Public Works, MPW, PM of CDRW, with thankfulness for JICA and CDRW activities and hoping to start again as soon as possible the Capacity Development Project for road sector with same style as CDRW.



Mr. Jose G.R.C. Piedade
Director General of Public Works, MPW
Project Manager for The Project for the Capacity
Development of Road Works (CDRW)



Mr. Koji Naito
Team Leader of the JICA Experts,
The Project for the Capacity Development of
Road Works (CDRW)



CDRW



LIST OF ATTENDANT FOR JOINT COORDINATING COMMITTEE MEETING (JCC)

Title : Joint Coordinating Committee Meeting (JCC) for CDRW-4
Place : Conference Room of MPW
Date / Time : September 30 (Tuesday), 2014, 14:30 to 16:00 p.m.

NO	NAME	DESIGNATION/POSITION	SIGNATURE
1	Jose Viedade	DG OP	
2	Rui HERNANES	ANEPEC	
3	Hikoyuki UKAZ	JICA	
4	Yukihito Tateyama	JICA Advisor	
5	Estevão de Carvalho	EPCC-OP	
6	Payuan Te Templo	philkoei	
7	JEREL JOHN CELADINA	PHI	
8	JOAO GREGORIO DE C.	MOP-EPCC	
9	Soma Atsushi	JLCS	
10	DEONISIO Guterres	DNA - DGSC	
11	Juáto Pereira	DNEPCC	
12	MENINO AMARAL	PMU - BMM/STK	
13	SAVED F. EQBALI	DNEPCC/RAD/GIS	
14	Collins Makoriwa	" " / Training	Mkc
15	Sonia F. Moreira	DGSC - MOP	
16	Erasmus A. Soares	DGSC - MOP	
17	Isabel M. L. B.	MOP/EPCC	
18	Angelo Ribeiro	Dep. COP. EXT	
19	Francisco B. Gama	MOP - EPCC	
20	Agostinho Ataíde	MOP - EPCC	



CDRW



LIST OF ATTENDANT FOR JOINT COORDINATING COMMITTEE MEETING (JCC)

Title : Joint Coordinating Committee Meeting (JCC) for CDRW-4
Place : Conference Room of MPW
Date / Time : September 30 (Tuesday), 2014, 14:30 to 16:00 p.m.

NO	NAME	DESIGNATION/POSITION	SIGNATURE
1	ANTONIO DE - A.	DATA BASE EPCC	
2	Nobuyuki Kurihara	CDRW	
3	Koji NAITO	CDRW	
4			
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ATTCHMENT 5.4

**Material for Joint Coordinating Committee Meeting
(Contents of CDRW-4 Activities, Recommendations)**



Japan International Cooperation Agency



Ministry of Public Works
The Democratic Republic of Timor-Leste

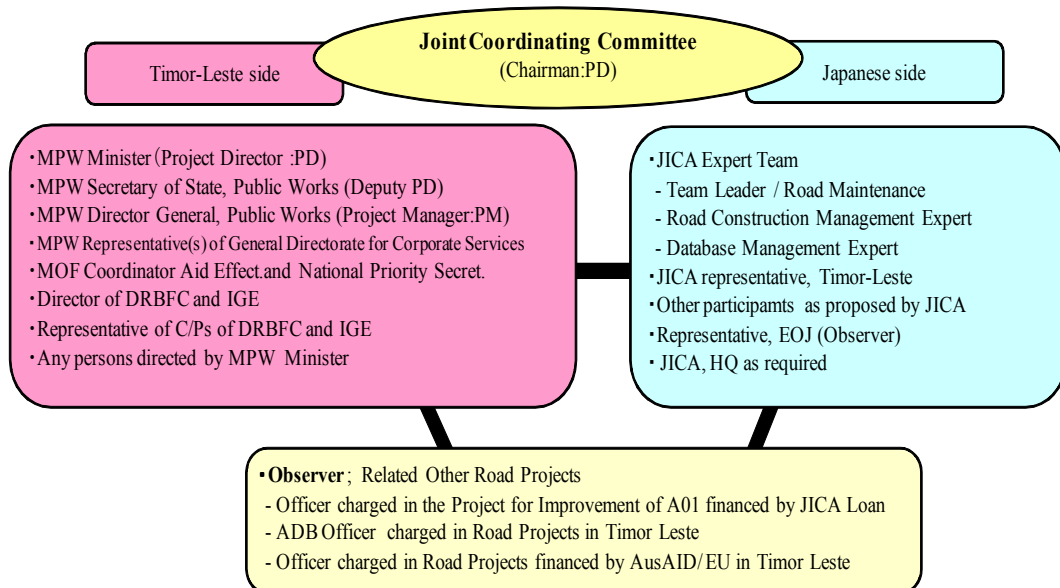
TECHNICAL COOPERATION

The Project for the Capacity Development of Road Works
4th Year (CDRW-4)

JOINT COORDINATING COMMITTEE MEETING
CDRW-4
September 30, 2014

1

Organization Structure for JCC (CDRW-4)



2

Agenda for JCCM for CDRW-4

- ① Outline & Achievement for CDRW-4
- ② Equipment supplied by JICA
- ③ Any Other Issues when Necessary
- ④ Q & A and Free Discussions
- ⑤ Address by Chief Representative of JICA and Closing Address by the Chairman

3

Outline/Achievement of CDRW-4

Item	2014							
	5	6	7	8	9	10	11	12
Domestic advance preparations								
0-1 Study for project implementation								
Item1: Overall matter								
1-1 Explanation and discussion of implementation plan								
1-2 Report and summarize the Progress report								
1-3 Report and summarize the Final report								
Item2: Support to enhance the Bridge Resister Database								
2-1 Improve the Bridge Resister Database								
2-2 Conduct the OJT for DRBFC staffs								
Item3: Training and instruction on proper use of the equipments								
3-1 Support for receiving provided machinery to								
3-2 Support for handling of provided machinery								
3-3 Training with Provided Machinery on Actual Roads								
Item4: Promotion of the effects for Overall program through Sharing Project Achievements								
4-1 First Technical Working Group Meeting			(Jul.04)				(Sep.18)	
4-2 Second Technical Working Group Meeting								
4-3 Hosting of the Joint Coordinating Committee							(Sep.30)	

4

Detailed Pgs./Achieve. for CDRW-4 (1/2)

Work Item	2014																
	July				August				September				October				
	1(T)	7(M)	14	21	28/31	4(M)	11	18	25	31(M)	8	15	22	29(M)	6(M)	13	20
Assignment of Experts																	
1) Mr.K.Naito ; Team Leader/ Road Maintenance					(Aug.4)								(Oct.5)				
2) Mr.N.Kurihara ; Road Equipment/Instruction of construction					(Aug.4)								(Oct.3)				
3) Mr.H.Aoyama; Database/Technical instruction	from (Jun.2)				(Aug.2)				(Aug.27)				(Sep.21)				
Bridge Resister Database																	
1) Improvement for Bridge Resister DB (Budgeting for rehabilitation and maintenance works on bridges by the Database according to the existing condition of bridges)	←																
2) Training to DRBFC staff for Improved DB	←																
3) Preparation of the site survey (for sample route)	→																
4) Training to DRBFC staff at Site on Sample Route (A01 from Baucau to Com)	→																
5) Training for summarizing of the site survey into DB	→																
6) Preparation of the Guideline for Improved Bridge Resister Database	→																
Reports																	
1) Progress Report (4th Year)	←																
2) Completion Report (4th Year)	←																
Meeting with MPW and DRBFC																	
	No.1 Technical Working Group Meeting (Jul.4)				No.2 Technical Working Group Meeting (Sep.18)				Joint Coordinating Committee Meeting (JCC) (Sep.30)								

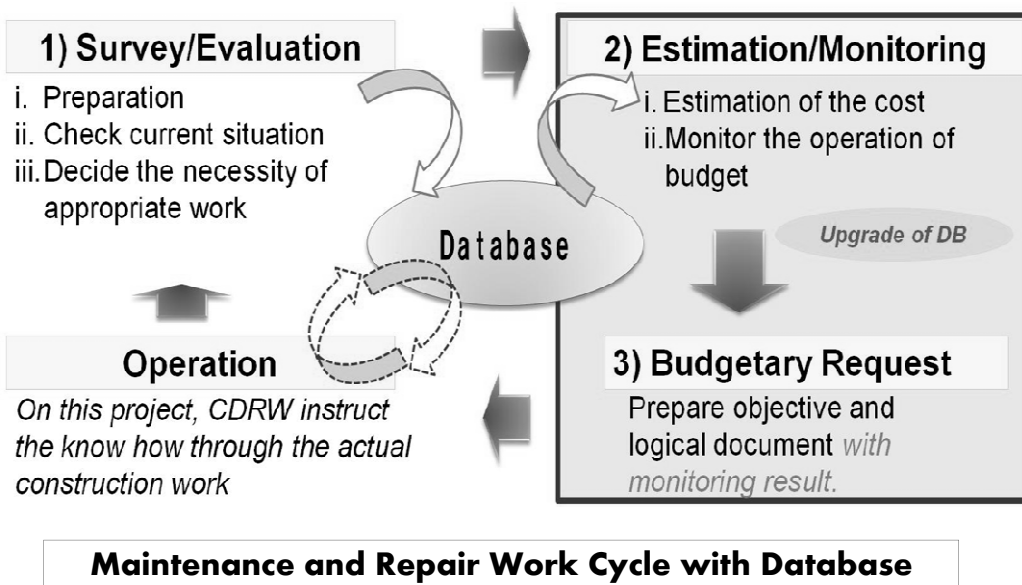
5

Detailed Pgs./Achieve. for CDRW-4 (2/2)

Work Item	2014																
	July				August				September				October				
	1(T)	7(M)	14	21	28/31	4(M)	11	18	25	31(M)	8	15	22	29(M)	6(M)	13	20
Equipment supplied by JICA for routine Maintenance Works																	
I Equipment Supply to DRBFC																	
1) Equipment arrival from JPN to Dili Port (1st Shipment)	(Jul.26)				(Asphalt sprayer, Asphalt cutter, Concrete breaker, Plate compactor, Tamping rammer, Leveling instrument, GPS instrument, Total station)												
2) Port clearance for Equipment & move to DRBFC site					Arrival at DRBFC, (Aug.22)				Arrival at DRBFC (Trucks with crane) on Sep.04, 2014								
3) Arrival of 1st shipment to DRBFC site																	
4) Trucks with crane (2nd Shipment)																	
5) Port clearance for Trucks to DRBFC site	Arrival at Dili Port (2nd shipment) on (Aug.18)								(Sep.04)								
6) Get number plate for Trucks and transportation to respective places for equipment																	
7) Handing over ceremony to DRBFC/MPW from JICA	→																
II Training and Instruction on proper use of the Equipm																	
1) Support to DRBFC for clearance of the equipment & trucks	→ at DRBFC Site (Aug.25 - Aur.29)																
2) Demonstration of for Equipment (Asphalt sprayer, Asphalt cutter, Concrete breaker, Plate compactor, Tamping rammer)	→																
3) Plan and preparation of the training schedule for the equipment	→																
4) Tainting and instruction to DRBFC staff at sites (sample sites)	→																
5) Preparation guideline for proper use of the equipment on routine road maintenance	→																

6

Upgraded Bridge Register Database (1/8)



7

Upgraded Bridge Register Database (2/8)

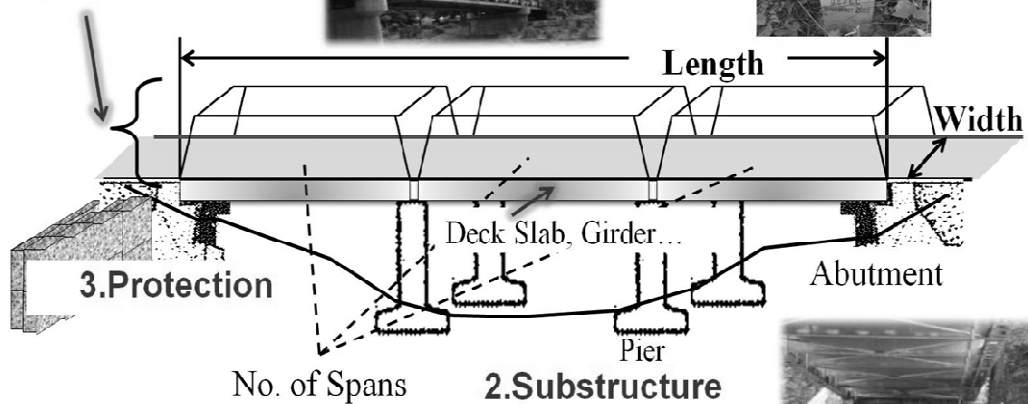
2) Survey Items - 1

1. Superstructure

Type and Condition



Milestone



+ Bridge basic data
 Location River, Road No., Region, district, GPS, Year Built, Location from B.P.
 Bypass potential



Upgraded Bridge Register Database (3/8)

2) Survey Items - 2

Rough condition of bridge structure.

Condition	Remarks	
A:Very good	Brand new	
B:good	No crack and no damage	
C:Acceptable	Some crack but sustainable	
D:Bad	Heavy Damage	
E:Very bad	Completely broken	

9

Upgraded Bridge Register Database (4/8)

Total Number of Bridge

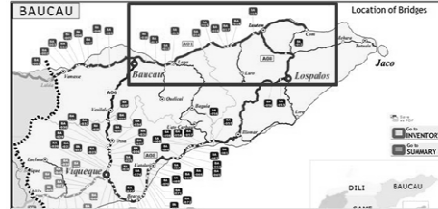
Region	Road No.	Bridge Register Database Veri	
		Each Road	Sub-Total
DILI	A01	34	103
	A02a	6	
	A03	45	
	A04	10	
	A09	8	
BAUCAU	A01	19	87
	A06	18	
	A07a	13	
	A08	37	
	A02a	26	
SAME	A02b	19	96
	A05	14	
	A09	19	
	A13	3	
	A14	15	
MAIJANA	A02b	13	114
	A03	12	
	A03'	8	
	A04	14	
	A10	17	
	A11	25	
	A12	14	
OECUSSI	A15	10	39
	A16	1	
	A17	8	
	A18	21	
	A19	10	
TOTAL		439	10

Upgraded Bridge Register Database (5/8)

Training Operation at site using the updated database

We gave practical training from 8th Sep 2014 to 10th Sep 2014 between Baucau to Com A01 road. On this training, the DRBFC staffs became able to

- 1) Diagnose damaged parts
- 2) Judge techniques to be applied
- 3) Estimate the Volume for budget



Upgraded Bridge Register Database (6/8)

Bridge Register Database Inspection Sheet

Basic Data				
Date	Inspector	Road Name	Bridge Name	km from E.P.
09/09/2014	Francisco	A01	BA-011 Laga mulis	1406

Damage Part information

Part 1	Part 2	Material	Situation	Length (m)	Width (m)	Height (m)
1. Superstructure	1) Deck Slab	1) Concrete	1) Cracking, Deformation or partial loss 2) Exposure of Reinforcing bar			
	2) Garter (beam)	1) Concrete 2) Steel	1) Cracking, Deformation or partial loss 2) Exposure of Reinforcing bar 3) Corrosion (rust)			
	3) Culvert	1) Concrete	1) Cracking, Deformation or partial loss 2) Exposure of Reinforcing bar			
	4) Truss	1) Steel	1) Cracking, Deformation or partial loss 2) Corrosion (rust)			
	5) Guard Rail	-	1) Missing			
2. Substructure	1) Foundation (Base structure)	1) Concrete	1) Cracking, Deformation or partial loss 2) Scouring "For Apron" 2) Scouring "For River Bed Protection"	5	7.1	2
	2) Abutment	1) Concrete 2) Stone Masonry 3) Gabion 4) Others	1) Cracking, Deformation or partial loss 2) Scouring			
	3) Pier	1) Concrete	1) Cracking, Deformation or partial loss 2) Scouring			
	4) Others	1) Concrete 2) Stone Masonry 3) Gabion 4) Others	1) Cracking, Deformation or partial loss 2) Scouring			
3. Protection	1) Upstream	1) Concrete 2) Stone Masonry 3) Gabion	1) Cracking, Deformation or partial loss 2) No protection	10	2	1
		1) Concrete 2) Stone Masonry 3) Gabion	1) Cracking, Deformation or partial loss 2) No protection	10	2	1
	2) Downstream	1) Concrete 2) Stone Masonry 3) Gabion	1) Cracking, Deformation or partial loss 2) No protection	10	2	1
		1) Concrete 2) Stone Masonry 3) Gabion	1) Cracking, Deformation or partial loss 2) No protection	10	2	1

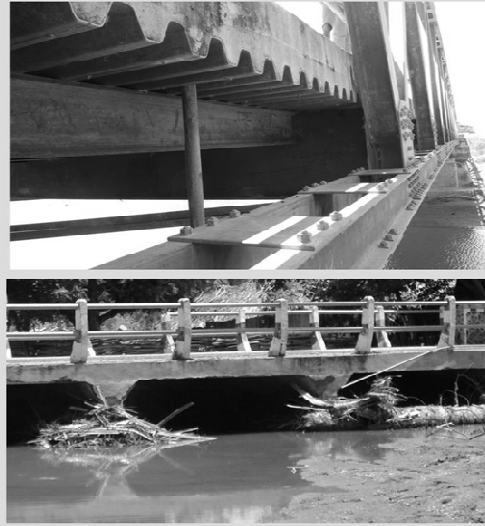


Upgraded Bridge Register Database (7/8)

Implement routine/ periodic Maintenance

Acquire suitable budget for **Periodic Maintenance Work**

Ex. Excavation, Cleaning drainage and remove the obstacle like tree.



13

Upgraded Bridge Register Database (8/8)

Actual operation based on Database

1) Survey/Evaluation

- i. Preparation
- ii. Check current situation
- iii. Decide the necessity of appropriate work

2) Estimation/Monitoring

- i. Estimation of the cost
- ii. Monitor the operation of budget

Database

3) Budgetary Request

Prepare objective and logical document *with monitoring result.*

Operation

Issue	Counter measure
DEBFC staff who draft the database have no information of who ordered which repairs or when they are carried out. The main reason is according to the lack of internal and external communications in NPW.	When construction is ordered based on a database entry, notify the officials in charge of database updates. Then they update database according to the information on time.

Maintenance and Repair Work Cycle with Database
Concentrate part in the next Stage

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