

JAPAN INTERNATIONAL COOPERATION AGENCY

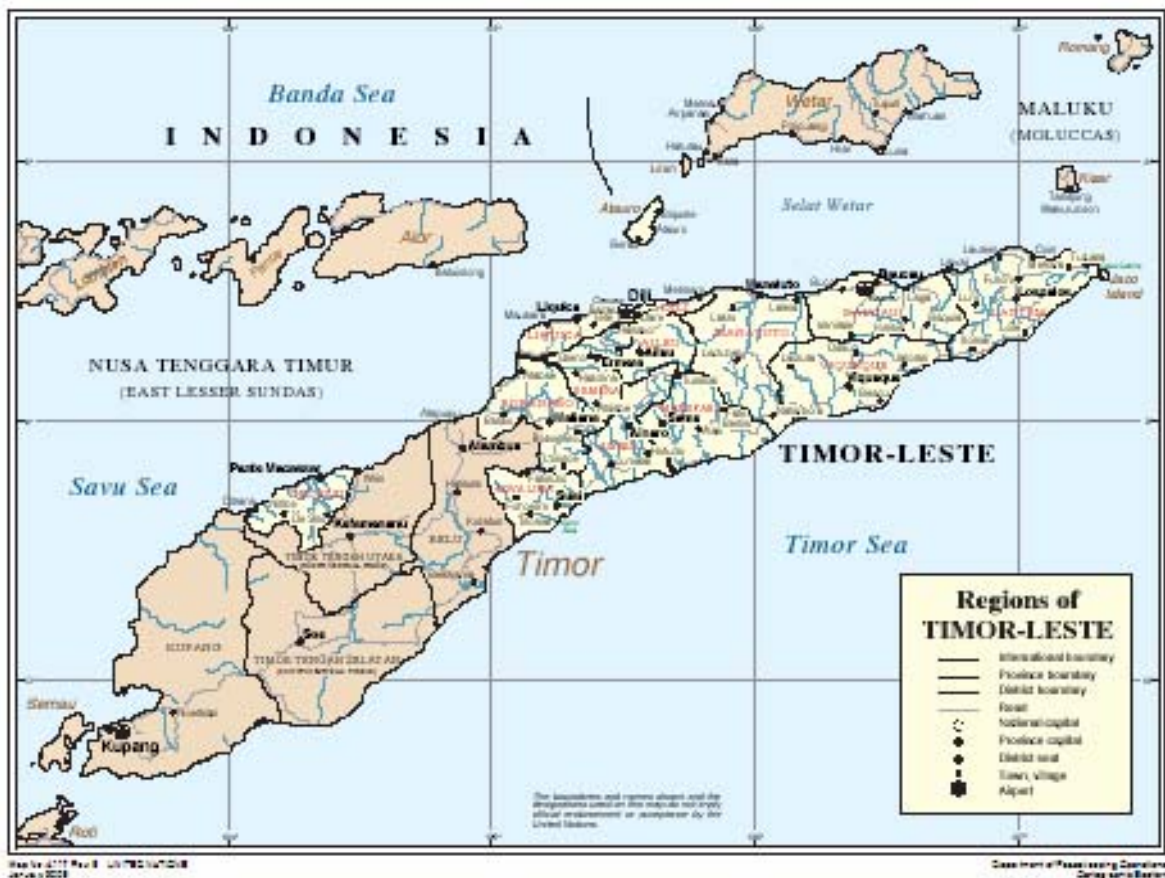
DEMOCRATIC REPUBLIC OF TIMOR-LESTE  
MINISTRY OF INFRASTRUCTURE (MOI)

**THE PROJECT  
FOR  
THE CAPACITY BUILDING OF  
ROAD MAINTENANCE  
IN  
THE DEMOCRATIC REPUBLIC OF TIMOR-LESTE**

**FINAL REPORT**

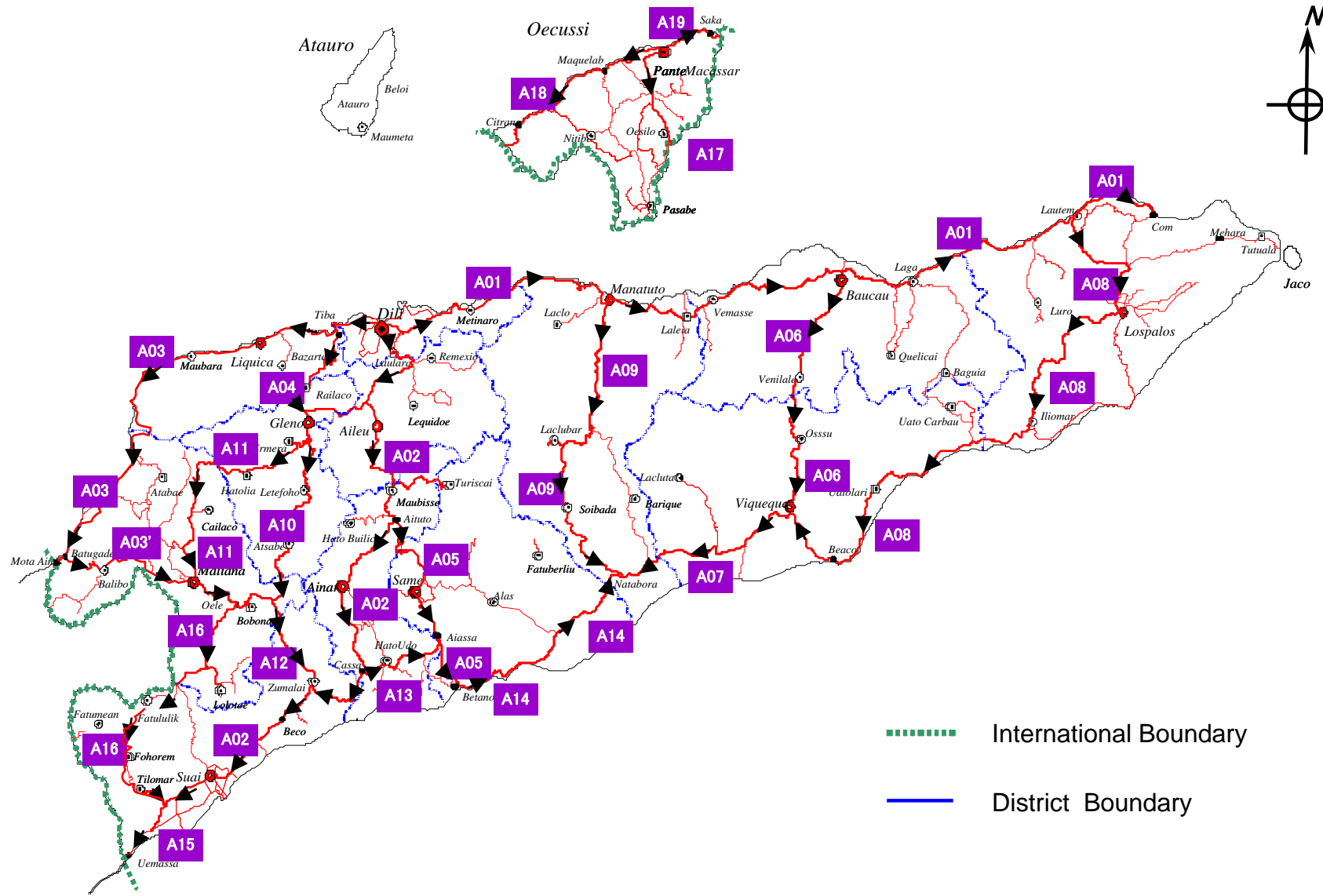
MARCH 2008

NIPPON KOEI CO.,LTD.



**Location Map  
(East Timor)**

Arterial Roads in East Timor



**Photograph on Capacity Building to DRBFC**



**Lecture for the Road Maintenance Database**



**Training on Road Condition Survey for the Database**



**Km Posts set on All Arterial Roads in East Timor (1,400 km)**



**Engineers Meeting in DRBFC**



**Training how to input the data and how to use the Database**



**Training for the Bridge Maintenance Database**

**Photograph on Capacity Building to IGE**



**Lecture for the Equipment Maintenance Database**



**Mechanics Training at Workshop**



**Operators Training at Training Yard of IGE**



**Lecture of Safety Operation for Equipment**



**Instruction before Starting of Operators Training at Site**



**Usage of Crane of IGE at Actual Construction Site**

**Photograph on Capacity Building through the Case Study**



**Road Condition before the Case Study**



**Road Condition after the Case Study**



**Site Seminar for Quarry of Course Material**



**Proof Rolling Test for Sub-base Course**



**Site Seminar for Drainage Construction**



**Daily Check for Equipment before Operation**



**Safety for Traffic at Construction Site**

**Photograph on JSC Meeting, Workshop and Seminar**



**No.2 Joint Steering Committee (JSC)  
Meeting (Jan. 2006)**



**No.3 JSC Meeting (Jul. 2007)**



**No.2 Technology Transfer  
Seminar (Jan. 2006)**



**No.4 Technology Transfer  
Seminar (May 2007)**



**Midterm Monitoring Workshop  
(Mar. 2007)**



**Terminal Evaluation  
Workshop (Dec. 2007)**

**The Democratic Republic of Timor Leste**  
**The Project for the Capacity Building of Road Maintenance in Timor Leste**

## **Final Report**

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## Abbreviation

ADB	Asian Development Bank
CBRM	The Project for the Capacity Building of Road Maintenance in the Democratic Republic of Timor Leste
CETRAP	Construction Equipment Training Project
C/P	Counterpart
DRBFC	Department of Road, Bridge and Flood Control
DTEM	Department of Transport. Equipment and Material (old department)
EU	European Union
GTZ	German Technical Cooperation
IC/R	Inception Report
IGE	Public Institute of Equipment Management
JEG	Japan Engineering Group
JICA	Japan International Corporation Agency
JPY	Japanese Yen Currency
JSC	Joint Steering Committee
JFY	Japanese Fiscal Year
KYT	Kiken Yochi Training , Training for Prevision of Danger
MOI	Ministry of Infrastructure
MOF	Ministry of Finance
MPW	Ministry of Public Works (old Ministry)
MNRME	Ministry of Natural Resources, Minerals and Energy (old Ministry)
MPF	Ministry of Planning and Finance (old Ministry)
MTC	Ministry of Transport and Communication (old Ministry)
MTCPW	Ministry of Transport Communication and Public Works (old Ministry)
OJT	On the Job Training
O/M	Operation and Maintenance
PDM	Project Design Matrix
PKO	Peace Keeping Operation
SE	Secretary of State
UNDP	United Nation Development Program
UNOPS	United Nation Office for Project Services
UNTL	National University of Timor Leste

***Chapter I***  
***Introduction***

## *Chapter I*

### **INTRODUCTION**

#### **1.1 Background of the Project**

Since 2000, the Government of Japan has been assisting East Timor in technical and financial aspects. In addition, Japan Engineer Group (JEG) of Self-defense Force was dispatched as a part of UN's Peace Keeping Operation (PKO), working for maintenance of strategic roads in the western area of East Timor. JEG activities were finished in June 2004. JEG has left his used vehicles, construction equipment, and construction material to East Timor for maintenance/repair of Nation's infrastructures.

It is expected to utilize these equipments for road maintenance/repair works. However, because of lack of experiences for newly born agencies and less numbers of engineering staff of DRBFC and IGE, both divisions were facing the difficulties of operation and maintenance of the arterial roads by utilizing these equipments.

In this connection, the Government of East Timor requested to Japan International Cooperation Agency (JICA) a technical assistance for improvement of road maintenance system through utilization of the above equipments. In response, JICA sent Expert Team called as "Construction Equipment Training Project (CETRAP)" from May 2004 through March 2005. After completion of CETRAP training program, however, it was judged that the more capacity development for DRBFC and IGE was necessary for self road maintenance and self management of equipment.

In order to establish the self-operation and maintenance system in both divisions, the Project for the Capacity Building of Road Maintenance in East Timor (CBRM) was launched.

The Project (CBRM) was started from First (1<sup>st</sup>) Field Work during late June, 2005 to early February 2006 and achieved some results. Second (2<sup>nd</sup>) Field Work was started in early May 2006 in order to continue the results of 1<sup>st</sup> Field Work. However, due to disturbance in East Timor, 2<sup>nd</sup> Field Work of CBRM was interrupted during late May up to the end of November 2006. After settling down of disturbance in East Timor, the 2<sup>nd</sup> Field Work was resumed in the beginning of December 2006 and completed in early August 2007. Second (2<sup>nd</sup>) Field Work from the beginning to the interruption period is called 2<sup>nd</sup> Field Work, Phase 1. The Work during December 2007 to August 2008, which was from the resumption of the Project to the end of the Second Year Work, is called 2<sup>nd</sup> Field Work, Phase 2.

Third (3<sup>rd</sup>) Field Work was started in late September 2007 and scheduled to be completed in middle of March 2008 continuing the activity results of CBRM during 1<sup>st</sup> and 2<sup>nd</sup> Field Work.

This Final Report is mentioned activities and results achieved in 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> Field Work of CBRM.

#### **1.2 Purpose of the Project**

"The Project for the Capacity Building of Road Maintenance in East Timor", hereinafter referred to "the Project", launched in late of June 2005 by 1<sup>st</sup> Year Field Work. At the beginning of the Project, the counterpart agencies (C/P agencies) were Department of Road,

Bridge and Flood Control (DRBFC) and Department of Equipment and Material Management (DTEM) under Ministry of Transportation, Communications and Public Works (MTCPW). However, due to restructure of Ministries on July 28, 2005, MTCPW was divided into three Ministries such as Ministry of Transportation and Communications (MTC), Ministry of Public Works (MPW) and Ministry of Natural Resources, Mineral and Energy (MNRME). DRBFC was under MPW, on the other hand, DTEM was changed the name to Division of Equipment Management (IGE) under MTC.

Moreover, Ministries of East Timor were again restructured on September 27, 2007. Ministry of Infrastructure (MOI) was structured with combining MTC, MPW and MNRME. DRBFC has been under Secretary of State (SE) for Public Works, MOI, and IGE has been under Secretary of State (SE) for Transportation and Communications, MOI.

Though two times of restructure of Ministries of East Timor were done during implementation period for the Project, organization structures of DRBFC and IGE, which were C/P agencies of the Project, have not been changed their organizations and not been influenced by restructures of Ministries in East Timor. Hereinafter, this report mentions referring to new Ministries which was restructured in September 2007 in East Timor.

Purpose of the Project is that capabilities on daily and periodic maintenance/repair and the restoration against road disaster on arterial roads are strengthened. For achievement of the purpose, the Project pursued an establishment of the self-operation and maintenance system in both organizations of DRBFC under SE for Public Works, MOI and IGE under SE for Transportation and Communications, MOI, and pursued capacity building of the technical staff of DRBFC and IGE

### 1.3 Project Overall Goal and Outputs

- Overall goal** : Arterial roads in East Timor are always maintained.
- Purpose** : Capability on daily and periodic maintenance/repair of arterial roads and restoration against road disaster areas on arterial roads are strengthened.
- Output 1** : Appropriate works for maintenance and repair of arterial roads are planned by DRBFC.
- Output 2** : Road management system, which central and regional road offices cooperate each other, is formulated.
- Output 3** : The staff members of DRBFC and IGE, who are responsible for the maintenance and repair works of arterial roads, are trained.
- Output 4** : The case studies of management plan on the maintenance and repair works of arterial roads are appropriately planned, designed and implemented.
- Output 5** : The operation system for construction equipment and repair equipment/tools is appropriately maintained and managed by IGE.

### 1.4 Counterpart Agency

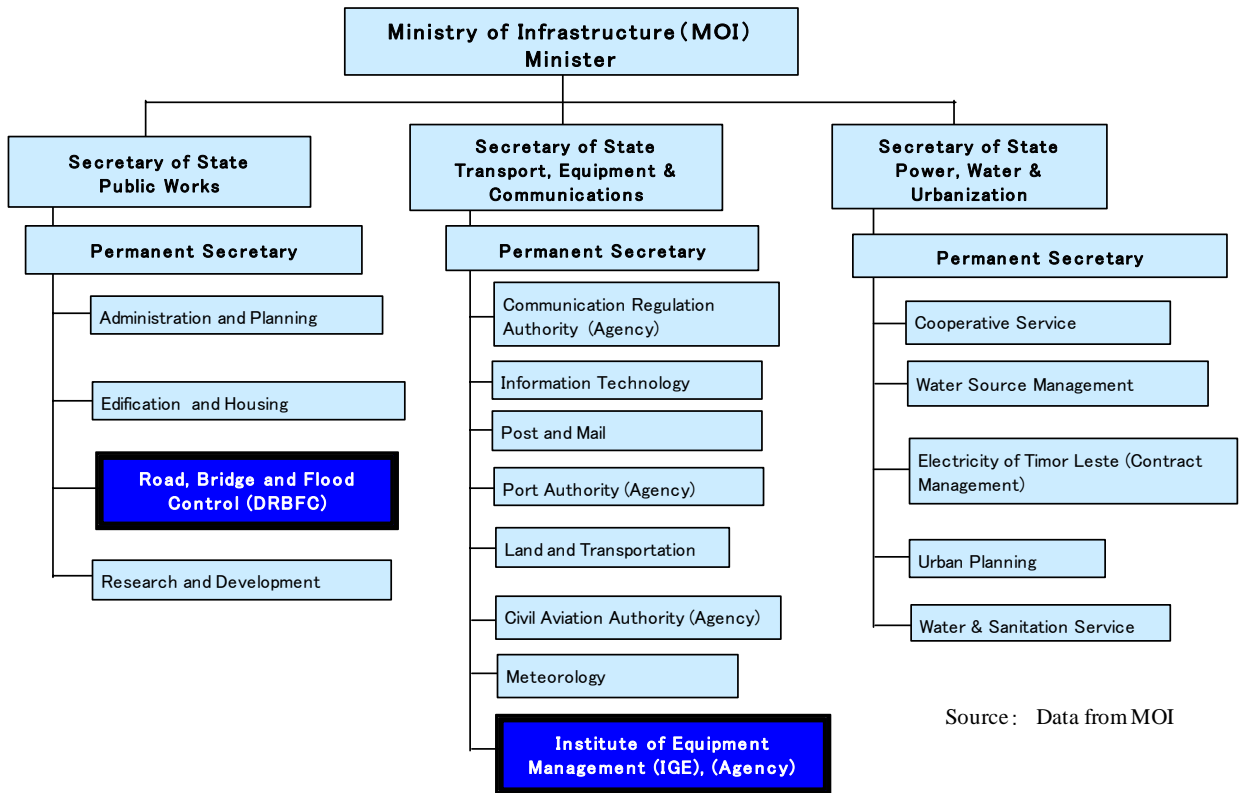
Counterpart agencies for the Project are DRBFC and IGE under MOI in order to achieve the project purpose. Functions of the both departments are defined as follows

DRBFC : Construction of new roads, maintenance and urgent repair works of the

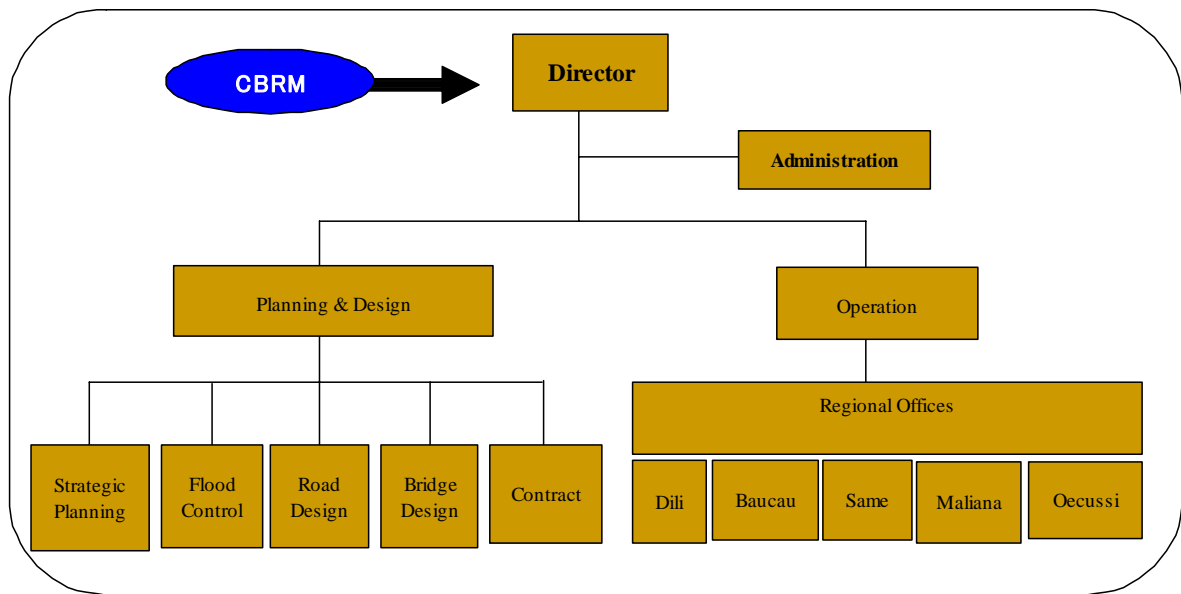


existing arterial roads in East Timor.  
 IGE : Operation and maintenance of construction equipment of IGE, and training of mechanics and equipment operators.

Organization structures for MOI, DRBFC and IGE are presented in the following [Figure 1.1](#), [Figure 1.2](#) and [Figure 1.3](#), respectively.

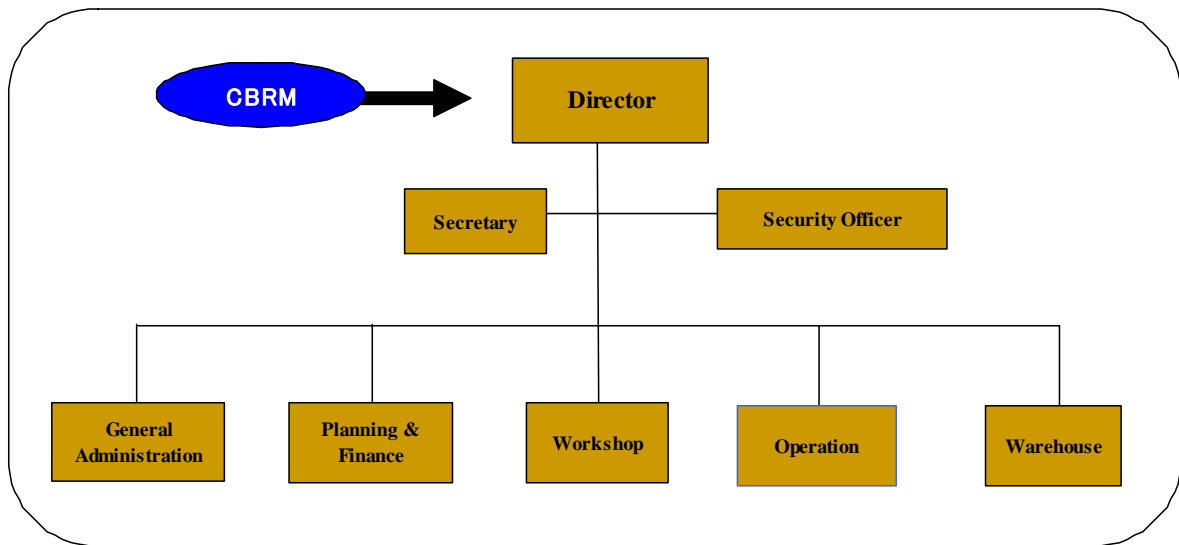


**Figure 1.1 Organization Structure of MOI**



Source: Data from DRBFC

**Figure 1.2 Organization Structure of DRBFC**



Source: Data from IGE

**Figure 1.3 Organization Structure of IGE**

Project Director and Project Manager, which are responsible persons of East Timor side for the Project, were Vice Minister and Permanent Secretary of Ministry of Public Works, MPW (old Ministry) during 1<sup>st</sup> and 2<sup>nd</sup> Field Work of the Project. Due to restructures of Ministries of East Timor in September 2007, Project Director and Manager are changed as follows:

- Project Director : Secretary of State (SE) for Public Works, MOI
- Project Manager : Permanent Secretary for Public Works, MOI

Numbers of staff as of February 2008 are listed in [Table 1.1](#) for DRBFC central office, [Table 1.2](#) for DRBFC regional offices and [Table 1.3](#) for IGE.

**Table 1.1 Staff Numbers in Central Office of DRBFC (as of February 2008)**

Staff	Staff numbers (persons)	
1) Director	1	
Sections	Planning & Design	Operation
1) Section chief	-	1
2) Engineer	6	-
3) Assistant engineer	-	-
4) Draftman	2	-
5) Administrative staff	8	-
6) Central store, chainman	3	-
7) Others (driver, etc.)	13	-
<b>Total</b>	<b>32</b>	<b>1</b>

Source : Data from DRBFC,

Note: Above figure shows the number of permanent and contract staff.

**Table 1.2 Staff Numbers in Regional Offices of DRBFC (as of February 2008)**

Staff	Regional office (persons)				
	Dili	Baucau	Same	Maliana	Oecussi
1) Regional engineer	1	1	1	1	1
2) Supervisor	3	3	3	3	1
3) Assistant supervisor	6	3	3	3	2
4) Administrative staff	3	2	2	2	2
5) Others (driver, etc.)	5	6	2	3	2
<b>Total</b>	<b>18</b>	<b>15</b>	<b>11</b>	<b>12</b>	<b>8</b>

Source : Data from DRBFC;

Note: Above figures shows the number of permanent and contract staff

**Table 1.3 Staff Numbers in IGE (as of February 2008)**

Staff	IGE Central Office (Taci Tolu)				
	General Administration	Planning and Finance	Workshop	Operation	Warehouse/ Security
1) Director	1				
2) Section Chief	1	1	1	1	1
3) Mechanics	-	-	23	-	-
4) Equipment Operators	-	-	-	40	-
5) Others (Adm.staff, secretary, etc.)	12	10			32
<b>Total</b>	<b>13</b>	<b>11</b>	<b>24</b>	<b>41</b>	<b>33</b>
<b>Total of IGE</b>	<b>123</b>				

Source : Data from IGE

Note: Above figure shows the number of permanent and contract staff.

## 1.5 The Project Area

East Timor covers her territory at eastern part of the Timor Island and Oecussi which is an exclave in NTT of Indonesia, and offshore some islands. In the island, core mountains at the central area having around 3,000 m altitude runs at east-west direction. Thus the island is dominated by deep valleys and steep slopes in the mounting area. The arterial road (national road) network covers whole in the country including flat plain of north and south sea coast area and mounting area in the central with a total length of around 1,400 km. North side sea-coast roads are relatively well maintained while mounting roads and south side sea-coast roads are frequently blocked by land sliding and/or collapse of road banking due to flood.

List of arterial roads is shown in [Table 1.4](#) and map of road network of arterial roads in East Timor is figured in [Figure 1.4](#) as shown below:

**Table 1.4 List of Arterial Roads in East Timor**

No.	Between	Distance	No.	Between	Distance
A01	Dili – Com	203.9Km	A10	Ermera – Hauba	66.9Km
A02*	Dili – Suai	176.4Km	A11	Maliana - Ermera	64.7Km
A03	Dili – Mota Ain	118.2Km	A12	Zumalai – Maliana	52.5Km
A03'	Batugade – Maliana	42.4Km	A13	Cassa – Aiassa	25.1Km
A04	Tibar – Ermera	46.8Km	A14	Betano - Natarbora	47.7Km
A05	Aitotu - Betano	55.6Km	A15	Suai – Uemassa	27.5Km
A06	Baucau – Viqueque	64.9Km	A16*	Uele'o – Tilomar	33.4Km
A07*	Viqueque – Natarbora	46.0Km	A17	Pante Macassar – Oesilo	25.3Km
A08*	Lautem – Viqueque	122.0Km	A18	Pante Macassar – Citrana	44.9Km
A09	Manatuto – Natarbora	79.5Km	A19	Pante Macassar - Sacato	14.8Km
				Total	1,358.5km

Source: Data of CBRM from the results of road maintenance inventory survey in 2005

Note \*: Road maintenance inventory survey was not conducted on some parts of A02, A07, A08 and A16 (around 70 km in total) since the routes are unable to fix by disaster of flood or heavy rain.

Source: CBRM

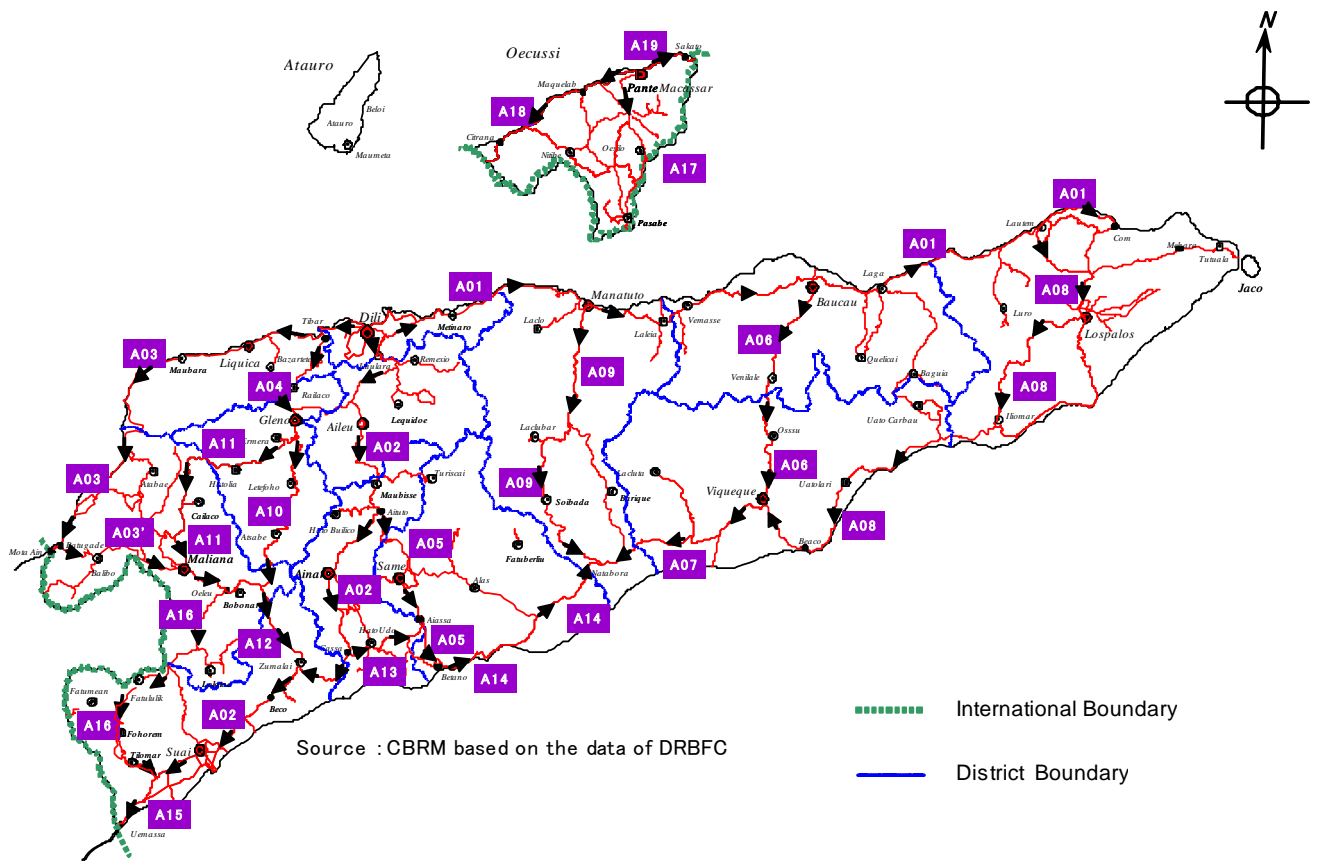


Figure 1.4 Map of Arterial Roads in East Timor

***Chapter II***  
***Project Implementation***

**Chapter II**  
**PROJECT IMPLEMENTATION**

**2.1 Basic Information of the Project**

Basic information of the Project is summarized below:

**【Basic Information of the Project】**

<b>Name of the project:</b>	The Project for the Capacity Building of Road Maintenance in the Democratic Republic of Timor Leste
<b>Recipient country:</b>	Democratic Republic of Timor Leste
<b>Counterpart organizations:</b>	<p>During project implementation period, the following re-structures for the upper ministry of Counter Part (C/P) Agencies such as Department of Road, Bridge and Flood Control (DRBFC) and Institute of Equipment Management (IGE), have been done. However, organizations for C/P agencies had not changed.</p> <p><b>【At the begging of the Project】</b> Both C/Ps were under Ministry of Transportation, Communications and Public Works (MTCPW)</p> <p><b>【After July 28, 2005】</b> DRBFC was under the Ministry of Public Works (MPW) and IGE was under Ministry of Transportation and Communications (MTC)</p> <p><b>【After September 27, 2007】</b> DRBFC is under Secretary of State (SE) of Pubic Works of Ministry of Infrastructure (MOI), and IGE is under SE of Transportation and Communications of MOI</p>
<b>Operation system :</b>	<p>Project Director : Secretary of State (SE), Public Works, Ministry of Infrastructure (MOI)</p> <p>Project Manager : Permanent Secretary for Public Works, MOI</p> <p>Joint Steering Committee : East Timor Side; SE of Public Works, Permanent Secretary, Director of DRBFC, IGE, Foreign Assistance of MOF, Director of Ministry of Justice and etc. Japanese Side; Representative of JICA T/L Office, CBRM Experts and etc.</p>
<b>Implementing period:</b>	3 Field Works from June 21, 2005 to March 18, 2008 including interruption period of around 6 months in 2 <sup>nd</sup> Field Work, RD signed date: April 20, 2005
<b>Program:</b>	JICA Technical Cooperation Project
<b>Other relevant cooperation by JICA:</b>	<ul style="list-style-type: none"> <li>- An individual expert for Road Advisor (end at May 2006)</li> <li>- An individual expert for Infrastructure Policy Advisor (end at May 2006)</li> <li>- The Project for Capacity Development by Training and Preparation of Guidelines and Manuals for Roads</li> </ul>

Source : Data of CBRM

## 2.2 Project Design Matrix

Project Design Matrix (PDM) was prepared at the time of record of discussions on April 20, 2005 for the Project. The structure and contents of PDM had not been changed since the commencement of the Project. PDM was prepared in order to make clear the project overall goal, project purpose, output, activities and etc. Though the Project was interrupted during around six (6) month in 2006, the Project was implemented with no drastic change of PDM. In order to monitor the influence of project activities due to project interruption by the disturbance in East Timor, JICA monitoring mission was visited to the Project in March 2007. In this time the following remarks were presented against the Project Design Matrix:

- Remarks-1 : Most of the project activities need to be centered in Dili with a view to minimizing security-related accidents.
- Remarks-2 : An importance needs to be placed on a kind of trainer's training system in which achievement of the training that regional office's representatives have received could successfully be disseminated to the other members of regional offices.
- Remarks-3 : Reporting and communicating system between the central and regional offices needs to be improved and elaborated for better understanding between them.
- Remarks-4 : Equipment/machinery of IGE will be kept in Dili instead of distributing them to regional offices.

PDM prepared at initial stage of the Project is attached in [Attachment 2.1](#).

## 2.3 Project Implementation Process

Project implementation period was around 23 months of Field Works from June 21, 2005 to March 18, 2008 including interruption period of around 6 months. The Project was done through First (1<sup>st</sup>) Field Work, JFY 2005, Second (2<sup>nd</sup>) Field Work, JFY 2006, and Third (3<sup>rd</sup>) Field Work, JFY 2007. [Table 2.1](#) shows the implementation period for field work of the Project.

**Table 2.1 Implementation Period of the Project**

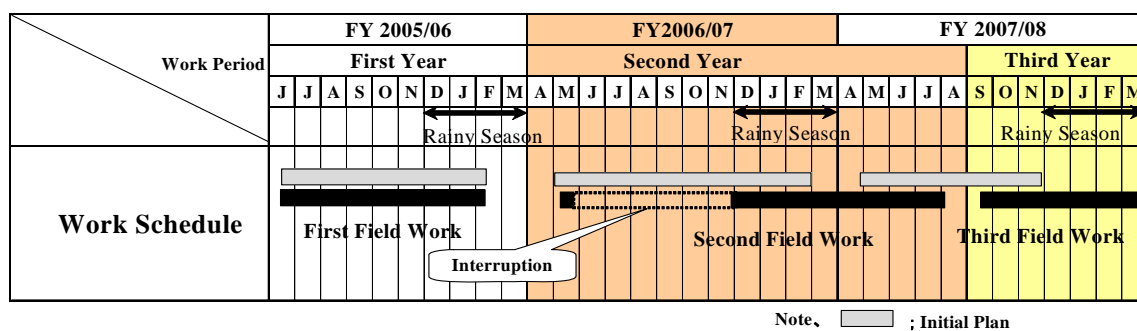
Field Work	Implementation Period (Field Work)	
First Field Work (1 <sup>st</sup> Field Work)	June 21, 2005 ~ February 9, 2006	7.80 months
Second Field Work, Phase 1 (2 <sup>nd</sup> Field Work Phase 1)	May 10, 2006 ~ May 28, 2006	0.63 months
Second Field Work, Phase 2 (2 <sup>nd</sup> Field Work Phase 2)	December 01, 2006 ~ August 07, 2007	8.33 months
Third Field Work (3 <sup>rd</sup> Field Work)	September 21, 2007 ~ March 18, 2008	6.00 months
Total for Field Work Months		22.76 months

Source: Data of CBRM

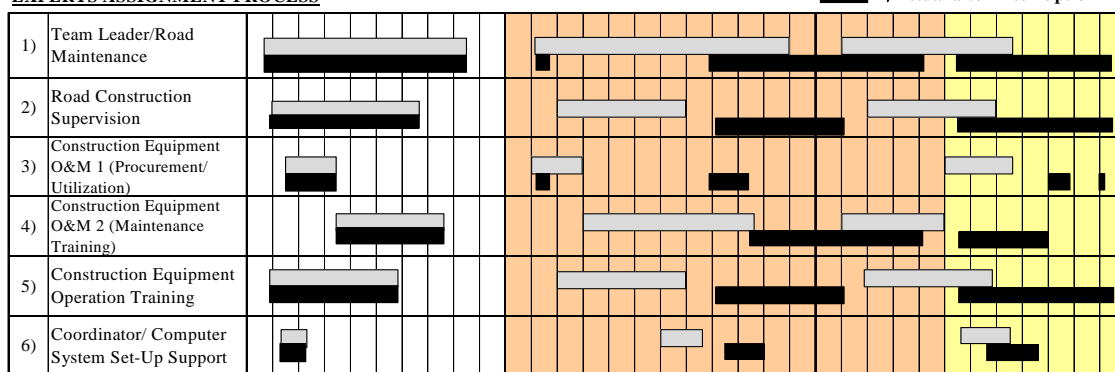
Implementation process comparing with initial plan and achieved one after interruption is shown in [Figure 2.1](#) with assignment process of Japanese experts.



**OVERALL PROCESS OF THE PROJECT**



**EXPERTS ASSIGNMENT PROCESS**



Source : Data of CBRM

**Figure 2.1 Implementation and Assignment Process for the Project**

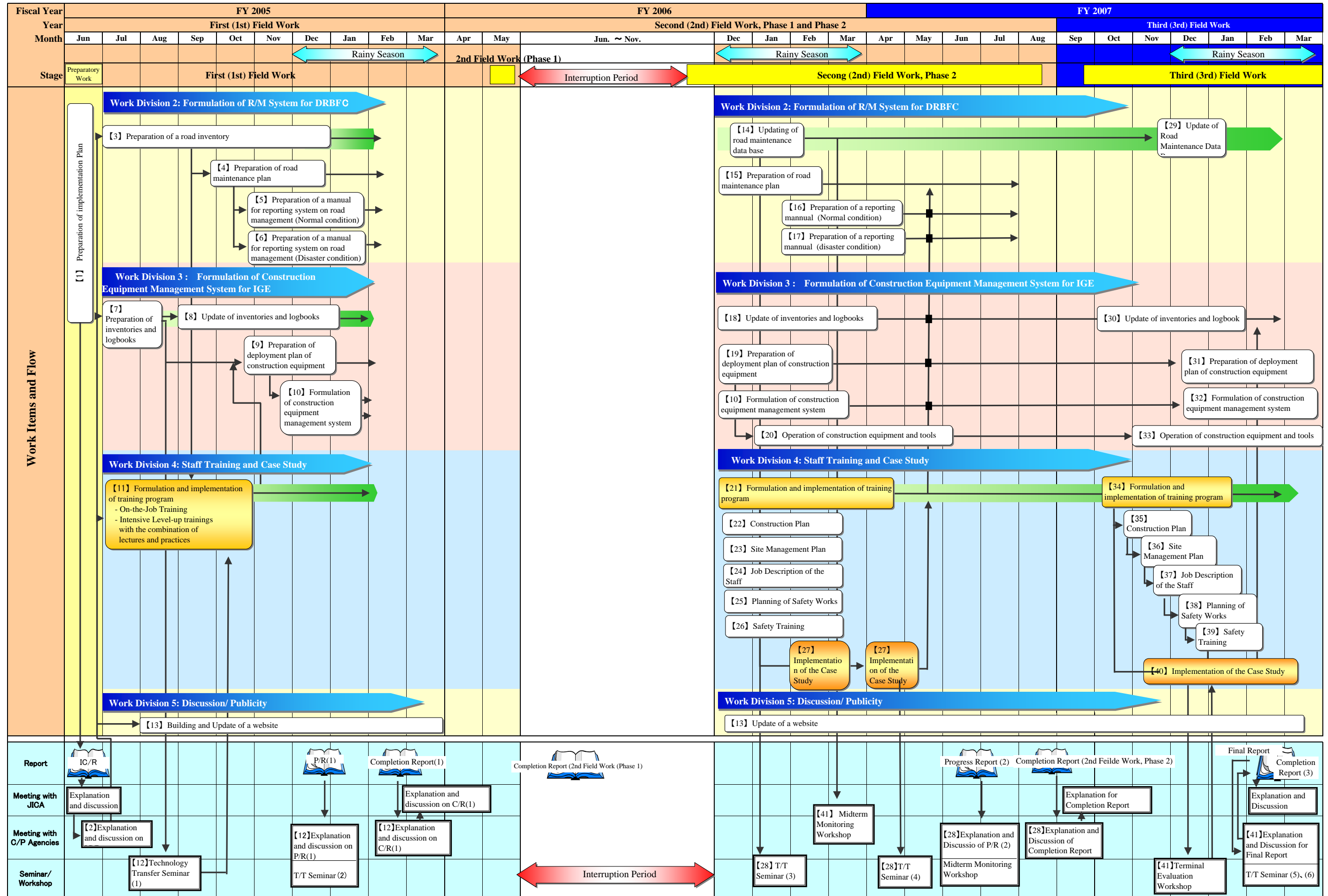
The Project was implemented with dividing five work divisions taking into consideration of activities as mentioned in PDM. Contents of work division and relative activities in PDM are shown as below [Table 2.2](#). Flow chart of the project implementation is shown in [Figure 2.2](#). The detail implementation process comparing with initial schedule and after interruption is shown in [Figure 2.3](#).

**Table 2.2 Work Division for the Project**

Work Division	Contents of Work Division	Relative Activities in PDM of CBRM
Work Division-1 General	- Inception report and meeting	
Work Division -2 Formulation of Road Maintenance System for DRBFC	- Road maintenance database - Up-dating of database - Preparation of road maintenance plan - Manual for reporting system (normal condition) - Manual for reporting system (disaster condition)	Activity 1-1 to 1-3 Activity 2-1,2-2 Activity 3-1
Work Division- 3 Formulation of Construction Equipment System for IGE	- Database for construction equipment - Updating of equipment database - Management plan for equipment/tools - Formulation of management system of the equipment - Operation of the equipment according to the system	Activity 3-1 Activity 4-1 to 4-6 Activity 5-1 to 5-5
Work Division-4 Staff Training and Case Study	- On the Job Training - Incentive level-up trainings with the combination of lectures and practice	Activity 3-1 Activity 4-1 to 4-6
Work Division-5 Discussion and Publicity	- JSC meeting and seminar/work shop - Website setting-up and its up-dating	Activity 3-1

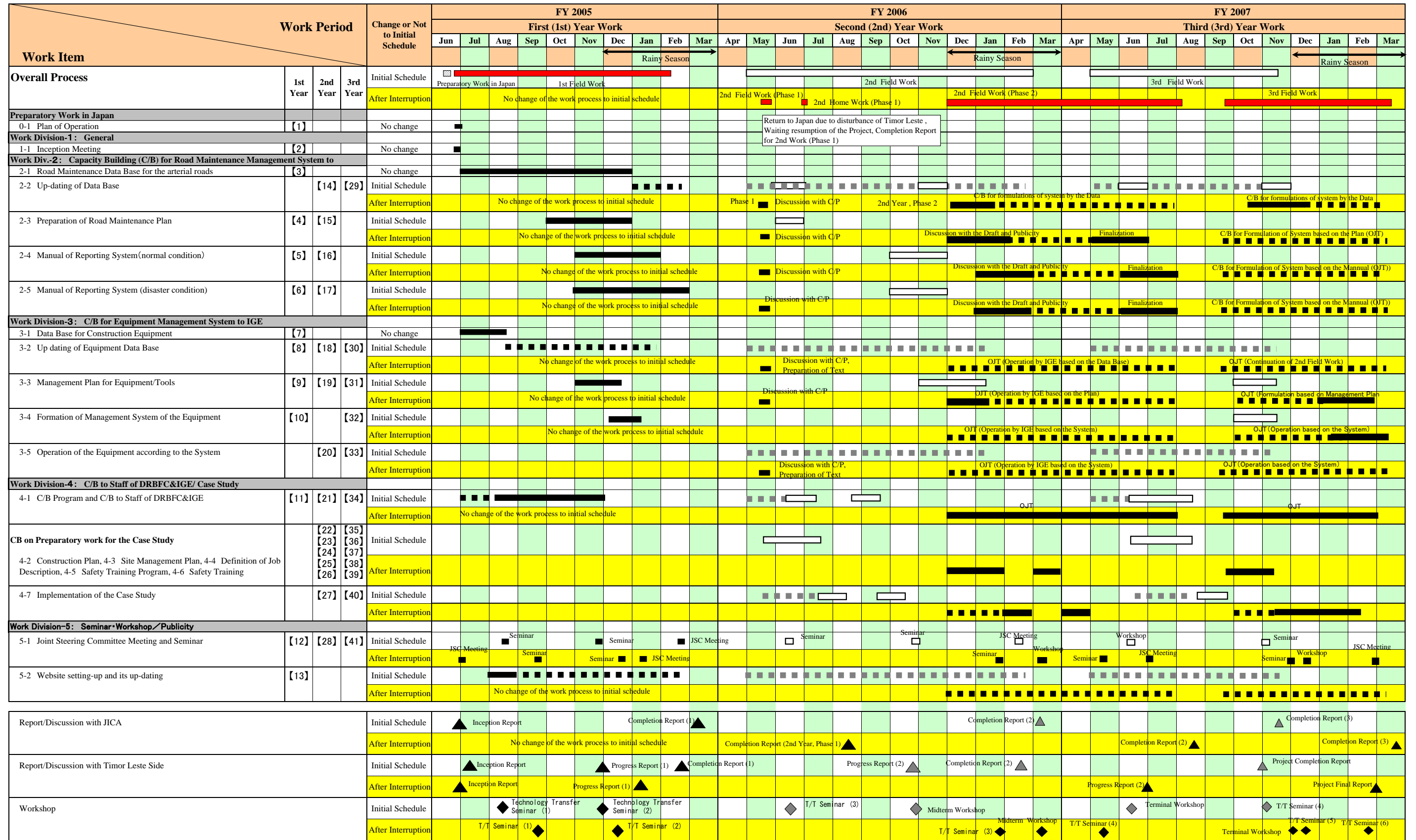
Source: Data of CBRM

Figure 2.2 Work Flow for the Project



Source : Data of CBRM

Figure 2.3 Implementation Process of the Project (Comparing with Initial Schedule and Actual Process after Interruption)



Legend: : Work Schedule by Initial Stage : Work Process after Interruption

Source : Data of CBRM

## 2.4 Project Input

### 2.4.1 Input by Japanese side

(1) Achieved assignment of Japanese experts

Assigned Japanese experts for the Project were 75.62 man-months in total through 1<sup>st</sup> Field Work, 2<sup>nd</sup> Field Work and 3<sup>rd</sup> Field Work. Below [Table 2.3](#) shows the achieved assignment of Japanese experts and their details comparing with initial plan are shown in [Figure 2.4](#). Detail of assignment period for Japanese experts is shown in [Attachment 2.2](#).

**Table 2.3 Achieved Assignment Period for Japanese Experts**

Experts		Assignment Period (M/M)			
Position	Name	1 <sup>st</sup> Field Work	2 <sup>nd</sup> Field Work	3 <sup>rd</sup> Field Work	Total
1. Team Leader / Road Maintenance	Koji NAITO	7.80	8.96	6.00	22.76
2. Road Construction Supervision	Nobuyuki KURIHARA	5.80	5.00	6.00	16.80
3 Construction Equipment O/M –1	Etsuo HASHIGUCHI	1.80	2.13	0.80	4.73
4 Construction Equipment O/M –2	Etsuo HASHIGUCHI	5.00	6.83	3.50	15.33
5 Construction Equipment Operation Training	Mitsuo NAKAYAMA / Tetsumi NISHIDA	5.00	5.00	6.00	16.00
6 Coordinator/ Computer System Set-up Support	Makoto YOKOTA/ Natsuno MATSUURA	(1.00)	(1.50)	(2.00)	(4.50)
Total		25.40	27.92	22.30	75.62

Source : Data of CBRM

Figure 2.4 Assignment Process for JICA Experts of CBRM (Comparing with Initial Plan and Actual Assignment after Interruption)

Position	Name		Man /Month (M/M)																																		Man /Month (M/M)														
			JFY 2005										JFY 2006										JFY 2007										2005 (1st Year)		2006 (2nd Year)		2007 (3rd Year)		Total												
			6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	Field	Home	Field	Home	Field	Home	Field	Home							
1	Team Leader / Road Management	Koji NAITO	Initial Plan	234 (7.80)										300 (10.00)										195 (6.50)										7.80		10.00		6.50		24.30											
			Actual Assignment after Interruption	234 (7.80)										19 (0.63)	2nd Year (Phase 1)										250 (8.33)	2nd Year (Phase 2)										180 (6.00)	3rd Year	7.80		8.33 (Phase 1)		6.00 (Phase 2)		22.76							
2	Road Maintenance/Construction Management	Nobuyuki KURIHARA	Initial Plan	174 (5.80)										150 (5.00)										150 (5.00)										5.80		5.00		5.00		15.80											
			Actual Assignment after Interruption	174 (5.80)										2nd Year (Phase 2)										39 (1.30)											111 (3.70)											180 (6.00)	5.80		5.00 (Phase 2)		6.00
3	Construction Equipment O&M 1 (Procurement/Utilization)	Etsuo HASHIGUCHI	Initial Plan	54 (1.80)										60 (2.00)										75 (2.50)										1.80		2.00		2.50		6.30											
			Actual Assignment after Interruption	54 (1.80)										19 (0.63)	2nd Year (Phase 1)										45 (1.50)	2nd Year (Phase 2)										24 (0.80)	1.80		0.63 (Phase 1)		0.80 (Phase 2)		4.73								
4	Construction Equipment O&M 2 (Maintenance Training)	Etsuo HASHIGUCHI	Initial Plan	150 (5.00)										195 (6.50)										120 (4.00)										5.00		6.50		4.00		15.50											
			Actual Assignment after Interruption	150 (5.00)										2nd Year (Phase 2)										205 (6.83)											105 (3.50)	5.00		6.83 (Phase 2)		3.50		15.33									
5	Construction Equipment Operation Training	Mitsuo NAKAYAMA/ Tetsumi NISHIDA	Initial Plan	150 (5.00)										150 (5.00)										150 (5.00)										5.00		5.00		5.00		15.00											
			Actual Assignment after Interruption	150 (5.00)										Nakayama										2nd Year (Phase 2)										150 (5.00)	Nakayama										180 (6.00)	5.00		5.00 (Phase 2)		6.00	
6	Computer System Support / Coordinator	Makoto YOKOTA/ Natsuno MATSUURA	Initial Plan	30 (1.00)											45 (1.50)										Nishid										60 (2.00)	(1.00)		(1.50)		(2.00)		(4.50)									
			Actual Assignment after Interruption	30 (1.00)	Yokota										2nd Year (Phase 2)										45 (1.50)	Matsuura										60 (2.00)	(1.00)		(1.50) (Phase 2)		(2.00)		(4.50)								
Initial Plan, Field M/M			Total																																		25.40		28.50		23.00		76.90								
Actual M/M after Interruption			Total																																		25.40		27.92		22.30		75.62								
1	Team Leader / Road Management	Koji NAITO	Initial Plan	3 (0.10)											3 (0.10)																					0.20		0.00		0.00		0.20									
			Actual Assignment after Interruption	3 (0.10)											3 (0.10)	2nd Year (Phase 1)										10 (0.33)											0.20		0.33 (Phase 1)		0.53										
2	Road Maintenance/Construction Management	Nobuyuki KURIHARA	No change between Initial Plan and after Interruption	6 (0.20)																															0.20		0.00		0.00		0.20										
			Initial Plan	3 (0.10)											3 (0.10)																					0.20		0.00		0.00		0.20									
3	Construction Equipment O&M 1 (Procurement/Utilization)	Etsuo HASHIGUCHI	Initial Plan	3 (0.10)											3 (0.10)																					0.20		0.00		0.00		0.20									
			Actual Assignment after Interruption	3 (0.10)											3 (0.10)	2nd Year (Phase 1)										10 (0.33)											6 (0.20)	0.20		0.33 (Phase 1)		0.20		0.73							
4	Construction Equipment O&M 2 (Maintenance Training)	Etsuo HASHIGUCHI	No change between Initial Plan and after Interruption																																			0.00		0.00		0.00		0.00							
			Initial Plan																																			0.00		0.00		0.00		0.00							
5	Construction Equipment Operation Training	Mitsuo NAKAYAMA/ Tetsumi NISHIDA	No change between Initial Plan and after Interruption																																			0.00		0.00		0.00		0.00							
			Initial Plan																																			0.00		0.00		0.00		0.00							
6	Computer System Support / Coordinator	Makoto YOKOTA/ Natsuno MATSUURA	No change between Initial Plan and after Interruption																																			0.00		0.00		0.00		0.00							
			Initial Plan																																			0.00		0.00		0.00		0.00							
Initial Plan, Home M/M			Total																																		0.60		0.00		0.00		0.60								
Actual M/M after Interruption			Total																																		0.60		0.66		0.20		1.46								
Report	Submission		IC/R											Progress Report (1)	Completion Report (1st Year)	Completion Report (2nd Year, Phase 1)	Progress Report (2)	Completion Report (2nd Year, Phase 2)	Final Report	Completion Report (3rd Year)																															
			First (1st) Year	2nd Year (Phase 1)										2nd Year (Phase 2)										3rd Year																											
Total for Initial Plan			Total																																		25.40	0.60	28.50	0.00	23.00	0.00	76.90	0.60							
Total for Actual Assignment after Interruption			Total																																		25.40	0.60	27.92	0.66	22.30	0.20	75.62	1.46							
																																					26.00		28.50		23.00		77.50								
																																					26.00		28.58		22.50		77.08								

Source : Data of CBRM

Initial Plan  
Actual Assignment after Interruption

2nd Year Sub total (Phase 1 and Phase 2)  
Phase 1 1.26 0.66  
Phase 2 26.66 0.00

(2) Counterpart training in Japan

Counterpart training in Japan was executed in 1<sup>st</sup> Field Work of the Project. There was not counterpart training in Japan on the Project in 2<sup>nd</sup> and 3<sup>rd</sup> Field Work. Detail of counterpart training is shown in [Attachment 2.2](#):

(3) Equipment provision by Japanese side in the Project

Equipments for workshop and transformer were supplied to C/P (IGE) in 1<sup>st</sup> Field Work. All equipments were procured in East Timor. Total amount of equipment was 89,121 US \$. Supplied equipments are tabulated in and their conditions are shown in [Attachment 2.2](#).

(4) Local cost born by Japanese side

Local cost born by Japanese side are “general affairs”, “provision of equipment”, and “expense for local consultant”. Equipment supply and expense for local consultant were done in 1<sup>st</sup> Field Work of the Project. All expense were done with US\$ and exchange rate were use in the JICA exchange rate of the month. Total cost including anticipated amount of 3<sup>rd</sup> Field Work, the amount of equipment supply and of payment for local consultant was 43,304 thousand Japanese Yen. The achieved local cost during 1<sup>st</sup> and 2<sup>nd</sup> Field Work and anticipated local cost during 3<sup>rd</sup> Field Work are shown in [Attachment 2.2](#).

#### 2.4.2 Input by East Timor side

(1) Allocation of counterpart personnel

Counterpart personnel were allocated timely by the request of the Project (CBRM). Activities of CBRM had been carried out mainly by OJT in order that capacity building activities made roots in DRBFC and IGE except equipment operator training. Numbers of counterpart personnel allocated in 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> Field Work are listed in below [Table 2.4](#). Name, position, tenure period and etc. for counterpart personnel are listed in [Attachment 2.3](#).

**Table 2.4 Numbers of Counterpart Personnel**

Working Group		1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year
		(Persons)	(Persons)	(Persons)
I	Capacity Building to DRBFC			
	1.1 Central Office of DRBFC	4	4	5
	1.2 Regional Office of DRBFC	22	20	19
	Sub-total	26	24	24
II	Capacity Building to IGE			
	2.1 Equipment Management System	8	8	6
	2.2 Training of Mechanics of IGE	17	18	19
	2.3 Training of Equipment Operators of IGE	20	12	15
	小計	45	38	40
III	<b>TOTAL</b>	<b>71</b>	<b>62</b>	<b>64</b>

Source : Data of CBRM

Note : 1) Detail of counterpart personnel is listed in Attachment 2.1.

2) Numbers of some counterparts personnel are overlapped in 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> Year.

(2) Budget of C/Ps of East Timor side

Special budget of East Timor side for the Project was not planned from initial stage of the Project. However, construction costs for maintenance/repairing works as the Case Study of CBRM were boned by the budget of DRBFC. Construction costs for the Case Study in 2<sup>nd</sup> and 3<sup>rd</sup> Field Work of CBRM were as follows:

Construction cost for the Case Study in 2 <sup>nd</sup> Field Work	: US\$ 48,598 (Around 5,630 thousand JYen)
Construction cost for the Case Study in 3 <sup>rd</sup> Field Work	: US\$ 97,916 (Around 10,771 thousand JYen)

Budgets for DRBFC and IGE which are counterpart agencies of the Project had been increased year by year. This means the recognition of importance of road works by the Government of East Timor. The yearly budget for DRBFC and IGE are shown in [Attachment 2.2](#), respectively.

## 2.5 Minutes of Meeting for Joint Steering Committee Meeting

During the project implementation, the Joint Steering Committee (JSC) Meetings were held five times as shown below:

### 【Summary of Joint Steering Committee Meeting】

JSC Meeting	Date	Main contents of meeting
No.1 JSC Meeting	June 25, 2005	<ul style="list-style-type: none"><li>- Chaired by Secretary of State of Public Works of MTCPW (old Ministry).</li><li>- Explanation for Inception Report and schedule for the Project</li><li>- These were approved by JSC at the meeting.</li></ul>
No.2 JSC Meeting	January 06, 2006	<ul style="list-style-type: none"><li>- Chaired by Vice Minister of MPW (old Ministry).</li><li>- The progress and activities executed during 1<sup>st</sup> Field Work of CBRM, and the next schedule of the Project activities in 2<sup>nd</sup> Field Work.</li><li>- Progress of CBRM activities was confirmed and next schedule for 2<sup>nd</sup> Field Work was approved by JSC at this meeting</li></ul>
No.3 JSC Meeting	July 06, 2007	<ul style="list-style-type: none"><li>- Chaired by Permanent Secretary of MPW (old Ministry).</li><li>- Activity results of CBRM in 2<sup>nd</sup> Field Work, Phase 2, and next schedule in 3<sup>rd</sup> Field Work of CBRM were confirmed and approved by JSC at this meeting.</li></ul>
No.4 JSC Meeting	December 17, 2007	<ul style="list-style-type: none"><li>- Chaired by Secretary State of Public Works, MOI</li><li>- Explanation of overview for terminal evaluation of CBRM by JICA evaluation mission.</li><li>- Explanation of evaluation methods and results by JICA evaluation mission.</li><li>- Signing of Minutes of Meeting (M/M) as to terminal evaluation results for CBRM</li></ul>
No.5 JSC Meeting (scheduled)	March 05, 2008	<ul style="list-style-type: none"><li>- Chaired by Secretary of State (SE) of Public Works, MOI.</li><li>- Explanation of Final Report on CBRM activities and completion for CBRM.</li></ul>

Source: Data of CBRM

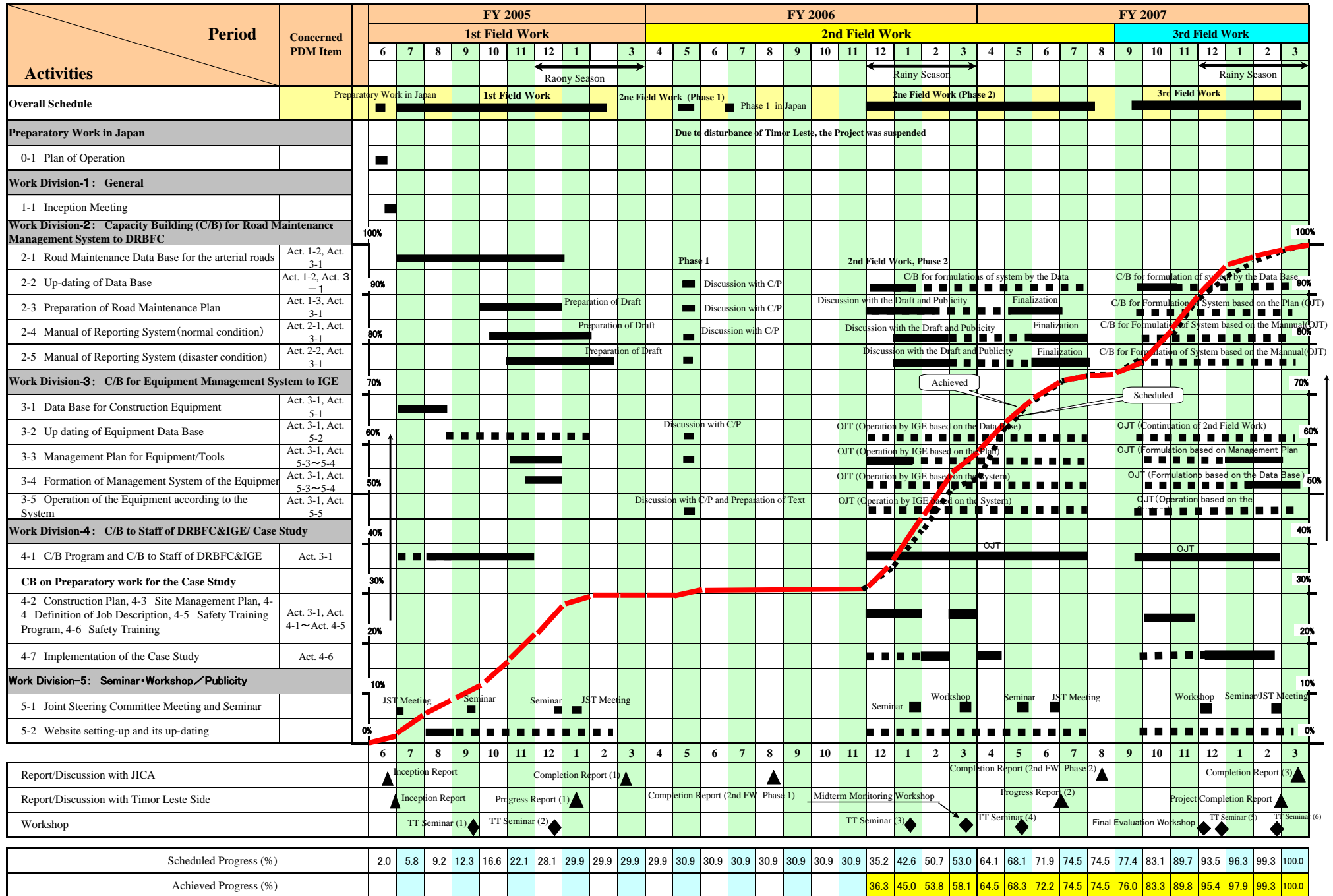
Minutes of Meeting for the above JSC meetings are attached in [Attachment 2.4](#).

## **2.6 Achieved Progress of the Project (CBRM)**

Achieve progress for overall of the Project (CBRM) including 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> Year Work is summarized in [Figure 2.5](#) as shown in next page based on the implementation process mentioned hereinbefore. Overall achieved progress for the Project was around 30 % after 1<sup>st</sup> Year Work (1<sup>st</sup> Field Work), 75 % after 2<sup>nd</sup> Year Work (2<sup>nd</sup> Field Work, Phase 2) and 100% after 3<sup>rd</sup> Field Work.



Figure 2.5 Overall Schedule and Progress of the Project (CBRM)



***Chapter III***  
***Project Activities***

## *Chapter III*

### **PROJECT ACTIVITIES**

#### **3.1 First (1<sup>st</sup>) Year Work (Preparatory Work in Japan)**

First (1<sup>st</sup>) Year Work had launched the preparatory work in Japan and followed the field work scheduled as below:

- a) Preparatory work in Japan : From June 18 to June 20, 2005
- b) First (1<sup>st</sup>) Field Work : From June 21, 2005 to February 09, 2006

The following work had been carried out in the preparatory work so as to do 1<sup>st</sup> Field Work efficiently and smoothly:

- Collection and analysis of existing data and information
- Plan of operation and work schedule
- Preparation of draft Inception Report

#### **3.2 First (1<sup>st</sup>) Field Work**

##### **3.2.1 Outline of 1<sup>st</sup> Field Work**

First (1<sup>st</sup>) Field Work had been carried out without changing work items mentioned in Inception Report and PDM of the Project (CBRM). It was also carried out taking into accounts of actual circumstances of Department of Road, Bridge and Flood Control (DRBFC) and Department of Equipment Management (IGE), which had been C/P agencies. The work had been carried out with dividing into two main activity items such as i) capacity building to DRBFC and ii) capacity building to IGE. Both activity items had been executed in parallel.

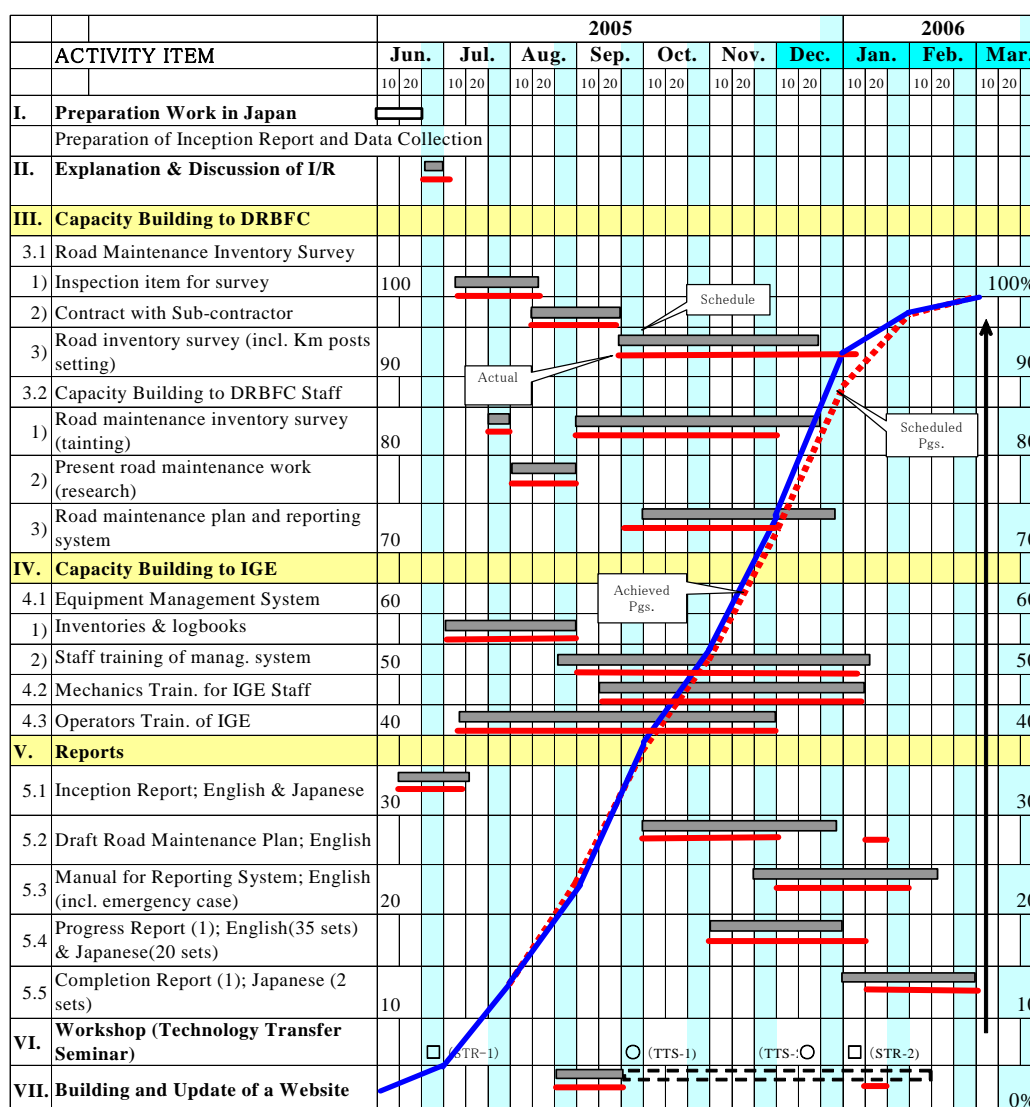
Activity items carried out in 1<sup>st</sup> Field Work of CBRM are shown in [Table 3.1](#) comparing with work items mentioned in the original schedule of Inception Report and PDM and [Figure 3.1](#) shows the progress chart of achieved 1<sup>st</sup> Field Work

**Table 3.1 Summary of 1<sup>st</sup> Filed Activity Item**

Activity Item (1 <sup>st</sup> Field Work)	Work Item in the Schedule of Inception Report	Relative Activities in PDM of CBRM
I. Preparatory Work in Japan	Preparatory work, Item0-1	
II. Explanation and Discussion on Inception Report	Work division 1, Item 1-1	
III Capacity Building to DRBFC		
3.1 Road Maintenance Inventory Survey	Work division 2, Item 2-1	Activity 1-1
1) Inspection item for survey	Work division 2, Item 2-1	Activity 1-1
2) Contract with sub-contractor	Work division 2, Item 2-1	Activity 1-1
3) Road inventory survey (incl. Km Posts)	Work division 2, Item 2-1	Activity 1-1
3.2 Capacity Building to DRBFC		
1) Road maintenance inventory survey (training)	Work division 4, Item 4-1	Activity 3-1
2) Present road maintenance work (research)	Work division 2, Item 2-3 Work division 4, Item 4-1	Activity 1-3 Activity 3-1
3) Road maintenance plan and reporting system	Work division 2, Item 2-4, Item 2-5	Activity 2-1,2-2 Activity 3-1
IV Capacity Building to IGE		

4.1	Equipment Management System	Work division 3, Item 3-1~3-5	Activity 3-1 Activity 5-1 to 5-5
1)	Inventories & logbooks	Work division 3, Item 3-1~3-5	Activity 3-1 Activity 5-1 to 5-5
2)	Staff training of management system	Work division 3, Item 3-1~3-5	Activity 3-1
4.2	Training for Mechanics of IGE	Work division 4, Item 4-1	Activity 3-1
4.3	Training for Equipment Operators of IGE	Work division 4, Item 4-1	Activity 3-1
V.	Reports		
5.1	Inception Repot, English, Japanese	Work division 1, Item 1-1	
5.2	Road Maintenance Plan, English	Work division 2, Item 2-3	Activity 1-3
5.3	Manual for Reporting System (incl. emergency case), English	Work division 2, Item 2-4, 2-5	Activity 2-1, 2-2
5.4	Progress Report (1), English, Japanese		
5.5	Completion Report (1 <sup>st</sup> Field Work)		
VI	Technical Transfer Seminar	Work division 5, Item 5-1	Activity 3-1
VII	Building and Updating of Website	Work division 5, Item 5-2	

Source: Data of CBRM



Source : Data of CBRM

Figure 3.1 Work Progress for the Project (CBRM) in 1<sup>st</sup> Field Work

### **3.2.2 Explanation and discussion of Inception Report**

Inception Report which was prepared in preparatory work in Japan was explained and discussed at the First (1<sup>st</sup>) Joint Steering Committee Meeting (JSC meeting). Main agenda for this meeting were plan of operation, work schedule and contents of CBRM. These were accepted by JSC. In this meeting, necessary arrangement by the Government of East Timor such as provision of the office space, arrangement of field practice for construction equipment operation and selection of counterpart personnel were also confirmed.

### **3.2.3 Capacity building to DRBFC**

#### **(1) Road maintenance inventory survey and database**

In order to plan and execute road maintenance works on arterial roads in East Timor by DRBFC themselves, practice of the inventory survey on arterial roads and preparation for database for road maintenance is a key factor.

The road maintenance inventory survey and preparation of their database had been undertaken to clarify the present conditions of arterial roads or damaged portions of arterial roads in East Timor. In order to clarify the location of present conditions or damaged portions, the installation of Km posts for road maintenance had been done by Sub-contractor of CBRM. On the other hand, road maintenance inventory survey had been mainly carried out by the staff of DRBFC, especially staff of regional offices so that they could update and plan the maintenance works by themselves properly.

The work had been carried out during middle of September to middle of December 2005 including installation of Km posts. Computer database had been completed middle of January 2006 and had been trained and handed to the staff of DRBFC.

#### **(2) Draft Road Maintenance Plan**

Draft report of Road Maintenance Plan for Arterial Roads in East Timor was prepared with following contents and purposes. This was explained and submitted to C/P agencies during 1<sup>st</sup> Field Work.

- a) Routine and periodic inspection for road conditions is one of key factors in order to achieve proper maintenance works. Road maintenance inventory survey (inspection of road condition), which should be carried out by regional staff of DRBFC, was mentioned in the report. The report includes the method and criteria for inspection taking the present road conditions of arterial roads in East Timor into considerations.
- b) Present maintenance works which had been done by DRBFC should be cleared in the report in order to reflect to the maintenance and repair plan on the arterial roads.
- c) Rehabilitation plans, which had already planned, or rehabilitation works under implementation on the arterial roads should be cleared in the report to reflect to the future maintenance plan for the arterial roads in East Timor.
- d) On the basis of above items a), b), c), strategy for future activity of road maintenance works for arterial roads in East Timor should be recommended and outlines of maintenance and repair plan should be presented in the report.

(3) Draft Manual for Reporting System (normal condition)

There are five (5) Regional Offices such as Dili, Baucau, Same, Maliana and Oecussi, covering whole area of the country under DRBFC. Regional offices are governed by operation section of the central office of DRBFC.

As for the road maintenance works on arterial roads, staff of regional offices carry out the inspection of the defect portions in which repairing works are required, supervising the routine and periodic maintenance works and so on. At present, job demarcations between the central office of DRBFC and regional offices for road works are summarized below:

Office	Kind of works demarcated
Central Office	<ul style="list-style-type: none"><li>- Planning, design for periodic road maintenance, rehabilitation, improvement and new construction works of roads with cooperation of regional offices</li><li>- Emergency recovering</li></ul>
Regional Offices	<ul style="list-style-type: none"><li>- Planning, design, procurement for routine road maintenance</li><li>- Construction supervision for all kinds of road works including routine, periodic and emergency maintenance, rehabilitation and improvement and new construction.</li></ul>

In the above demarcation, the reporting system between central office and regional offices was not definitely established. Reporting had been mainly done by personal judgment of engineers in the central office and regional offices case by case. This was not a systematic management for road maintenance works. Therefore, preparation of manual for reporting system was required with the following purposes:

- To establish a systematic reporting system between the central office and regional offices.
- To achieve a systematic and functional road maintenance works by using the reporting system.

Draft reporting manual between central office and regional offices of DRBFC on normal conditions as to road maintenance works for arterial roads had been prepared, explained and submitted to C/P agencies in 1<sup>st</sup> Field Work.

(4) Draft Manual for Reporting System on Road Maintenance in Emergency Case by Disaster

Emergency maintenance works are some kinds of immediate repairing works on roads defected by the disaster like heavy rains, flooding, landslides, and etc. For this type of maintenance, urgent activities are required so as to secure the traffic in the country. Then, reporting system for emergency maintenance is different to the reporting system for normal maintenance works such as routine and periodic maintenance. Special manual for reporting system at disaster time, therefore, would be required. Draft manual for reporting system on road maintenance in the emergency case by the disaster had been prepared, explained and submitted to C/P agencies in 1<sup>st</sup> Field Work.

(5) Capacity building to the staff of DRBFC

Training as to the method and criteria of inspection for road maintenance had been carried out to regional staff of DRBFC at regional offices and at actual roads before stating the inspection by regional staff. Numbers of staff who were trained for road inspection with inspection

sheets and criteria were 18 trainees in total for several days at respective regional offices. Training was executed with the following procedures:

- a) Text for seminar; inspection sheets, criteria and summary sheets were used. Presentation material for technology transfer seminar was also used to transfer the idea why the database was necessary. Seminar was done at respective regional offices before starting the actual inspection of road conditions.
- b) Training on the roads; after having the seminar, the training was carried out on actual situation of roads. Trainees were requested to execute the inspection with the inspection sheet in the following three steps.
  - The first step; to understand the items required to fill in the sheet, and how to record the measured data.
  - The second step; execution of inspection by trainees at the area where was selected by trainer (CBRM expert).
  - The third step; to find the defect and/or the subject by trainees themselves, and execute the inspection.
- c) After training in the office and on the road, trainees were requested to report the inspected data on the summary sheet.

In addition to the above, site training at actual construction site, which was the Project for Improvement of Roads between Dili and Casa financed by Japanese Grant Aid, was carried out. The trainees were limited as 4 to 5 persons because of transportation and accommodation arrangement at the site by DRBFC. They were supervisors from Dili, Baucau, Maliana and Same regional offices. Training was programmed in the seminar consisting of technical knowledge, site visiting and discussion for trainee's problem. Actual training was 4 days duration. It was enough to study the construction site works. It was the advantage to have the educational opportunity at the site that every trainee could express his carrier, experience and problems what he was facing.

### **3.2.4 Capacity building to IGE**

#### **(1) Capacity building of equipment management system to IGE**

The technology transfer pertaining to the equipment management was carried out mainly for six (6) counter part (C/P) personnel based on the training program of Inception Report. Technical guidance had been carried out by means of lecture, workshop and on the job training (OJT). The equipment management includes many different works such as managing for lease of equipment, equipment operation, gathering equipment's operation data, managing equipment maintenance, preparation and updating of database and parts procurement. Training had been carried out with the following targets with mainly OJT, which could train C/P personnel while actually carrying out the work on equipment management:

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① Establishment of equipment management system

Target: - to be managed the equipment systematically like lease the equipment, operation, maintenance, procurement of spar parts for the equipment

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- to be understood by C/P regarding to equipment management system, required activities for establish the management system, and how to operate the management system.

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② Preparation for database of equipment management system, up-dating of database and utilize it

Target: - to prepare the database for equipment management system  
- to be trained and mastered by C/P of IGE how to input the data, update and how to apply it to actual equipment management

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(2) Training to mechanics of IGE

The target of mechanic training for 1<sup>st</sup> Field Work was designed for IGE mechanics to acquire the following basic knowledge and skills. On the job training (OJT) was adapted as means of workshop practice, and repair practice was also included in the program to cope with machine troubles as flexibly as possible.

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Theory:	Safety work, Four rules of arithmetic, Measurement, SI Units, Structure and function of const. machines, Principles of engine, Principles of power train, Torque, Pressure, Basic electric
Practice:	Safety work, Preparation of workshop, Periodic maintenance, Welding, Repairing machine

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The Project (CBRM) had taken all fourteen (14) mechanics of IGE into training course. On November, three (3) newly employed mechanics were added to the course. Two senior mechanics that were not counted as trainees were also included in the practice session as an assistant to CBRM expert. In addition to the above, three (3) students from engineering faculty of Timor University had been joined with the training course according to the request of Director of IGE.

(3) Training to equipment operators of IGE

Training to construction equipment operators of IGE had been done with actual operation training of equipment and lecture. In 1<sup>st</sup> Field Work, IGE offered to CBRM to train 20 trainees. CBRM accepted this offer without reducing the number of trainees. Their technical level was poor. Fifteen (15) trainees of 20 had no experience of operation of construction equipment.

Actual operating training had been done during 48 days in total at training yard near the IGE office. Operation training for bulldozer, excavator, wheel loader, motor grader, mobile crusher, roller, and crawler truck had been executed. In order to evaluate the operators' ability, evaluation sheet was prepared. This sheet consists of several evaluation items of operator techniques. Evaluation of operators had been done by scoring several items and making in total scores. Level of operators, which were five grade of operator's ability, was judged by total scores.

Operation training had to start how to move the bulldozer and how to operate the equipment operation lever for excavator to trainees who had not any operation experiences. As a result of training, almost all trainees were graded up their operation technique as they could work as assistant operators, though they couldn't work at actual construction site as equipment operators.



On the other hand, the Project (CBRM) had put an emphasis on KYT (Kiken Yochi Training, that is, Training for Prevention of Danger) as safety training. In KYT, an illustration on a screen is shown to trainees, and they detect the dangerous factors on the illustration and talk each other. KYT is one of the most popular tools for safety training in Japan. Through many times of KYT training, they were graded up their safety operation of construction equipment. At actual operation training, safety operation was also trained in many times as required.

### 3.2.5 Regular meeting, Joint Steering Committee meeting, seminar and website

#### (1) Regular meeting

Several kinds of meeting had been held during 1<sup>st</sup> Field Work of the Project (CBRM) with C/Ps, relevant agencies and JICA experts in order to make the project activities smooth, to confirm the progress and activities of the Project, and to share the information together. Contents of regular meeting hold in 1<sup>st</sup> Field Work are summarized as below [Table 3.2](#).

**Table 3.2 Regular Meeting (1<sup>st</sup> Field Work of CBRM)**

Regular Meeting	Contents of the Meeting
Regular Meeting in DRBFC	- Regular weekly meeting had been held at DRBFC office on every Monday regarding the capacity building to DRBFC with agenda of activities in the last week and next schedule for the Project. This meeting was normally attended with Director of DRBFC, Section Chief of Design and Planning, Section Chief of Operation, JICA road advisor and the Project experts. In addition to the above regular meeting, of course, several meetings were held at the desk of director, section chief, and CBRM office case by case as to particular issues.
Regular Meeting in IGE	- As for the capacity building to IGE, meetings between Director of IGE and the Project experts had been always held at Taci Tolu camp regarding the activities for management systems, mechanic's training and operator's training. In addition, monthly meeting held regularly in IGE, CBRM experts had participated. Seminars held by CBRM had been fully used as the discussion place between IGE and DRBFC and had made efforts to cooperate with together between both C/P agencies.
Regular Meeting with JICA T/L Office	- Monthly regular meetings had been held at JICA East Timor (T/L) office with agenda of progress of the project activities and next month schedule attending officials of JICA office, JICA experts (Infrastructure Policy adviser and Road advisor) and the Project experts.
Sharing Information by Letters to C/P Agencies	- Some kinds of important matters were reported by letters between CBRM and the Government of East Timor, especially MPW (old Ministry), DRBFC and IGE so as to share information regarding the Project. Fifty one (51) letters had been submitted in 1 <sup>st</sup> Field Work.
Joint Steering Committee Meeting	<ul style="list-style-type: none"> <li>- First (1<sup>st</sup>) Joint Steering Committee meeting was held at beginning stage of the Project on June 25, 2005 with attending members of Joint Steering Committees. Chairman of the meeting was Secretary of State of Public Works of MTCPW (old Ministry). Agenda for the first joint steering committee meeting was the explanation for Inception Report and schedule for the Project. These were approved by JSC at the meeting.</li> <li>- Second (2<sup>nd</sup>) Joint Steering Committee meeting was held on January 06, 2006, before completing 1<sup>st</sup> Field Work, regarding the progress and the next schedule of the Project activities. Chairman was Vice Minister of MPW (old Ministry). In this meeting progress of CBRM activities was confirmed and</li> </ul>

	next schedule was approved by JSC members.
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Source : Data of CBRM

(2) Seminar and workshop

Seminars were held two times during 1<sup>st</sup> Field Work as “Technology Transfer Seminar (1) and (2)” on September and December 2005, respectively at conference room of Taci Tolu CBRM office so as to make public relations of CBRM activities and to make improvement of consciousness of C/P agencies as to road maintenance and equipment maintenance.

Almost all presenters for above seminars were officials of DRBFC and IGE with assistance of CBRM experts. After presenting for respective agenda, several questions and answers were done. Invitation letter for the seminar was prepared by Project Director and sent to relevant offices of CBRM including other donors to East Timor. Attendances for these seminars were staff of MPW, MTC and JICA, EOJ and JICA Experts with around 40 persons in total. The following **Table 3.3** shows outlines of Technology Transfer Seminars in 1<sup>st</sup> Field Work of CBRM.

**Table 3.3 Outline of Seminar and Workshop (1<sup>st</sup> Field Work)**

Seminar	Day, Time	Place, Attendance	Outline of Seminar
Technology Transfer Seminar (1)	September 29, 2005 10:00 ~ 16:30	Conference room of IGE, Minister of MTC (old), Vice Minister of MPW (old), Director of DRBFC and IGE, Staff of DRBFC and IGE, JICA etc. around 40 attendance in total.	<ul style="list-style-type: none"> <li>- Opening speech by Vice Minister of MPW (old Ministry).</li> <li>- Plan of capacity building to DRBFC and Q/A.</li> <li>- Road maintenance inventory survey and Q/A.</li> <li>- Plan of capacity building to IGE and Q/A.</li> <li>- Mechanic training and Q/A</li> <li>- Equipment operator training and Q/A</li> <li>- Closing speech by Minister of MTC (old Ministry)</li> </ul>
Technology Transfer Seminar (2)	December 20, 2005 9:00 ~ 13:00	Conference room of IGE, Permanent Secretary of MPW (old). Director of DRBFC and IGE, JICA, etc. around 40 attendance in total	<ul style="list-style-type: none"> <li>- Opening speech by Permanent Secretary of MPW (old Ministry)</li> <li>- Progress and results of road maintenance inventory survey and Q/A</li> <li>- Strategy of road maintenance plan and Q/A</li> <li>- Progress of equipment management system of IGE and Q/A</li> <li>- Progress of training for equipment operators of IGE and Q/A</li> <li>- Closing speech by Permanent Secretary of MTC (old Ministry)</li> </ul>

Source: Data of CBRM

In addition to the above workshops, of course, several kinds of seminars to staff of DRBFC and IGE as a part of capacity buildings had been executed by CBRM experts during 1<sup>st</sup> Field Work.

(3) Website for the Project

During 1<sup>st</sup> Field Work of CBRM, the web site for CBRM was established in the official web site of Japan International Cooperation Agency (JICA) with English version and Japanese version. The web site was established aiming at sharing of data and information such as basic concept of the Project, schedule of the Project, results of the Project activities, and so on.

It also aims at collection of useful opinion from others. The website had been updated timely.

### **3.2.6 Works done by sub-contractor of CBRM**

In 1<sup>st</sup> Field Work of CBRM, the following work had been sub-contracted to the local contractor of East Timor to set road maintenance Km posts in all arterial roads of East Timor.

(1) Purpose

It was one of targets of the Project (CBRM) that arterial roads in East Timor were maintained properly and systematically by the Government of East Timor itself. In order to achieve this target, setting of Km posts and preparation of the database for road maintenance was one of the important factors. Sub-contracting work was to set Km posts on all arterial roads in East Timor with a total length of around 1,400 km and assist the road maintenance inventory survey which would be carried out by the staff of regional offices of DRBFC.

Setting of road maintenance Km posts had purposes to indicate the points of damaged portions on arterial roads, to prepare the road maintenance database and to prepare proper road maintenance plan. On the other hand, road maintenance inventory survey had been done by staff of regional offices with some assistance of sub-contractor of CBRM since DRBFC should execute the updating of the road maintenance database in future by itself.

(2) Sub contracting area

All arterial roads in East Timor (around 1,400 km)

(3) Sub-contracting work

Setting of Km Posts

- To set Km posts in all arterial roads with an interval of 5 km.
- To survey road length by using odometer checked by actual survey data.
- To make Km posts with a width 30 cm x 30 cm, height of 120cm by reinforced concrete and to buried with 50 cm at the required site with painting with oil paint indicating its location.
- To carry out the above work under supervision of CBRM experts.

Assistance for preparation of the road maintenance database

- Survey items are damaged points, and degree of damages for drainage facilities of roads, slopes, road surface, structures like culverts, bridges, etc.
- Survey should be done with survey sheets and be carried out by the staff of regional offices of DRBFC. Sub-contractor assists the survey like arrangement of cars, assistant of survey at damaged portions, etc.
- DRBFC should be done by itself so as to use the road maintenance database and prepare the road maintenance plan by DRBFC itself. With same reasons, data input to the database should be done by DRBFC with assistance of CBRM.

(4) Sub-contractor; Moris Construction PTY.

Address : Rua Campo Alor, Dili, East Timor e (Tel/Fax; +670-3310788)

Representative : Mr. Sunoto Hadi, President (Mobile; +067-7232308)  
 Signer : Mr. Sunoto Hadi, President  
 Registration No. : 02376/SECI/C/2005

(5) Contracted amount : US \$ 60,530.00

### 3.3 Second (2<sup>nd</sup>) Year Work, Phase 1, and Interruption of 2<sup>nd</sup> Year Work

#### 3.3.1 Outline

Second (2<sup>nd</sup>) Year Work of CBRM was scheduled originally to carry out from early May 2006 to early March 2007 with continuing the activities carried out in 1<sup>st</sup> Field Work. However, CBRM activities in 2<sup>nd</sup> Year Work were interrupted by sudden disturbance in East Timor, which was occurred from May 24, 2006. It was, therefore, defined that Second (2<sup>nd</sup>) Year Work, Phase 1, had been the period during starting time of 2<sup>nd</sup> Year Work in early May 2006 and interrupted time with waiting in Japan up to August 2006. Second (2<sup>nd</sup>) Year Work, Phase 1, had been executed with the following periods:

Work	Period
1) Second Field Work. Phase 1 :	From May 10, 2006 to May 28, 2006
2) Second Home Work in Japan, Phase 1:	From June 27, 2006 to July 6, 2006

Activities during 2<sup>nd</sup> Field Work, Phase 1, and 2<sup>nd</sup> Home Work, Phase 1, are mentioned in the following paragraphs:

#### 3.3.2 Second (2<sup>nd</sup>) Field Work, Phase 1

Second (2<sup>nd</sup>) Field Work, Phase 1, was started on May 11, 2006 that was arrival date at Dili. The work had been carried out so as to make 2<sup>nd</sup> Field Work smooth. This had been carried out up to sudden occurrence of the disturbance in East Timor on May 24, 2006. The following work had been carried out:

- a) Arrangement of data, documents and office equipment for CBRM office in DRBFC and IGE,
- b) Arrangement for local staff and rental cars so as to make the work smooth,
- c) Explanation of contents of 2<sup>nd</sup> Field Work of CBRM and discussion with C/P agencies and relevant agencies for CBRM so as to make the work smooth,
- d) Arrangement of Joint Meeting, which was scheduled to be held regularly once in two weeks, between DRBFC and IGE. First (1<sup>st</sup>) joint meeting was scheduled to be held on May 29, 2006,
- e) Preparation of materials for seminar of road maintenance,
- f) Research on conditions for equipment management system of IGE and present situation of IGE,
- g) Discussion with Director of IGE regarding the technology transfer and training program and confirmation of fundamental issues of them so as to make the activities smooth, and

h) Preparation of material for seminar to staff of IGE and mechanic training.

### **3.3.3 Interruption of 2<sup>nd</sup> Field Work, Phase 1 and 2<sup>nd</sup> Home Work, Phase 1**

As mentioned in previous paragraph, CBRM experts had to suddenly return to Japan on May 26, 2006 due to disturbance in East Timor. Experts executed in Japan some kinds of preparation of training materials supposing that CBRM would be re-started within one month.

However, JICA decided that the disturbance wouldn't be settled down immediately and the Project wouldn't be restarted within 60 days. Then, JICA also informed that the Contract between JICA and the Consultant on CBRM would be temporarily suspended and cleared.

There were many problems to clear the Contract since CBRM experts had left East Timor suddenly with only hand carry baggage. All clearance documents were left in CBRM office in Dili and payment to local staff and rental cars, etc. were not done at the time of leaving for Japan.

Clearance work of the Contract between JICA and the Consultant, however, was done in July 2006 through the local staff of Consultant with contacting between Tokyo and Dili. On the other hand, completion report for 2<sup>nd</sup> Field Work, Phase 1, of CBRM was submitted to JICA according to the Contract changing due to interruption of CBRM in 2<sup>nd</sup> Year. Assignment in 2<sup>nd</sup> Year Work, Phase 1, was shown in the following [Figure 3.2](#) comparing with the original assignment schedule in 2<sup>nd</sup> Year.

Position	Name		F/Y 2006 (2 <sup>nd</sup> Year of CBRM)													F/Y 2006			
			4	5	6	7	8	9	10	11	12	1	2	3	Field	Home			
1	Team Leader / Road Management	Koji NAITO	Original Schedule		10/5	300 (10.00)										3/5	10.00		
			2 <sup>nd</sup> Yeas (Phase 1)	10/5	19	28/5	(0.63)											0.63	
2	Road Maintenance / Construdtion Supervision	Nobuyuki KURIHARA	Original Schedule			24/6	150 (5.00)					20/11				5.00			
			2 <sup>nd</sup> Yeas (Phase 1)												0.00				
3	Construciton Equipment O&M 1 (Procurement/Utilization)	Etsuo HASHIGUCHI	Original Schedule	5/10	60	7/8	(2.00)											2.00	
			2 <sup>nd</sup> Yeas (Phase 1)	5/10	19	5/28	(0.63)											0.63	
4	Construciton Equipment O&M 2 (Procurement/Utilization)	Etsuo HASHIGUCHI	Original Schedule			7/9	195 (6.50)					1/19				6.50			
			2 <sup>nd</sup> Yeas (Phase 1)												0.00				
5	Construction Equipment Operation Training	Mitsuo NAKAYAMA	Original Schedule		6/1	150 (5.00)					10/28				5.00				
			2 <sup>nd</sup> Yeas (Phase 1)												0.00				
6	Computer System Support / Coordinator	Akio YAMASHITA	Original Schedule		6/1	7/15	(1.50)											(1.50)	
			2 <sup>nd</sup> Yeas (Phase 1)												0.00				
Total of Field Work			Original Schedule													28.50			
			2 <sup>nd</sup> Year (Phase 1)													1.26			
1	Team Leader / Road Management	Koji NAITO	Original Schedule												0.00				
			2 <sup>nd</sup> Yeas (Phase 1)	Waiting in Japan	6/27	7/6	Arrangement Data, Reporting										10	0.33	
2	Construciton Equipment O&M 1 (Procurement/Utilization)	Nobuyuki KURIHARA	Original Schedule												0.00				
			2 <sup>nd</sup> Yeas (Phase 1)												0.00				
3	Construciton Equipment O&M 1	Etsuo HASHIGUCHI	Original Schedule												0.00				
			2 <sup>nd</sup> Yeas (Phase 1)	Waiting in Japan	6/27	7/6	Arrangement Data, Reporting										10	0.33	
5	Construction Equipment Operation Training	Mitsuo NAKAYAMA	Original Schedule												0.00				
			2 <sup>nd</sup> Yeas (Phase 1)												0.00				
6	Computer System Support / Coordinator	Akio YAMASHITA	Original Schedule												0.00				
			2 <sup>nd</sup> Yeas (Phase 1)												0.00				
Total of Home (Japan)			Original Schedule												0.00				
			2 <sup>nd</sup> Year (Phase 1)												0.66				
Reports	Submit Peiod	Original Schedule in 2 <sup>nd</sup> Year																	
			Second (2 <sup>nd</sup> ) Year																
Total in 2nd Year (Original Schedule, 2nd Year Phase 1)			Original Schedule													28.50	0.00		
			2 <sup>nd</sup> Year (Phase 1)													1.26	0.66		

Source : Data of CBRM

Figure 3.2 Assignment Schedule for 2<sup>nd</sup> Year Work, Phase 1

### 3.4 Resumption of 2<sup>nd</sup> Year Work (2<sup>nd</sup> Field Work, Phase 2)

#### 3.4.1 Resumption of 2<sup>nd</sup> Field Work, Phase 2

Second (2<sup>nd</sup>) Field Work was scheduled originally to be started in early May 2006 and completed in early March 2007 during around 10 months. Updating of road maintenance inventory, updating of data for equipment management system and capacity buildings to DRBFC and IGE were planned following to the activities in 1<sup>st</sup> Field Work. In addition to the above activities, the Case Study at actual construction site with DRBFC and IGE was planned. However, as mentioned in the previous section, 2<sup>nd</sup> Field Work had been interrupted temporary due to the disturbance in East Timor from May 24, 2006. After the disturbance was settled down in East Timor, 2<sup>nd</sup> Field Work was re-started on December 01, 2006.

Period from starting time of 2<sup>nd</sup> Year Work to interruption periods with around 6 months is called as “2<sup>nd</sup> Year Work, Phase 1” including 2<sup>nd</sup> Field Work, Phase 1 and 2<sup>nd</sup> Home Work, Phase 1. Period from resumption of CBRM on December 2006 up to the end of 2<sup>nd</sup> Year Work is called as “2<sup>nd</sup> Field Work, Phase 2.

Second (2<sup>nd</sup>) Field Work, Phase 2, had been executed with a plan that the activities should be followed with activities in 1<sup>st</sup> Field Work as much as possible since continuous activities between 1<sup>st</sup> and 2<sup>nd</sup> Field Work would be very important for capacity building to DRBFC and IGE.

#### 3.4.2 Outline of 2<sup>nd</sup> Field Work, Phase 2

Activity items of 2<sup>nd</sup> Field Work, Phase 2, had been divided into the following three main activities:

- a) Capacity building to DRBFC continuously following 1<sup>st</sup> Field Work,
- b) Capacity building to IGE continuously following 1<sup>st</sup> Field Work. and
- c) Case Study at actual construction site in cooperation with DRBFC and IGE

In addition to the above main activities, technical transfer seminar and workshop, updating of website of CBRM, preparation of reports had been included in 2<sup>nd</sup> Field Work, Phase 2. Activities of CBRM in 2<sup>nd</sup> Field Work, Phase 2, are summarized as below. [Figure 3.3](#) shows the progress in 2<sup>nd</sup> Field Work, Phase 2.

#### 【Outline of CBRM Activities in 2<sup>nd</sup> Field Work, Phase 2】

Activity Item	Contents of Activities
<b>I. Capacity Building to DRBFC</b>	
1.1 Road Maintenance Inventory Survey	
1) Update of the Road Maintenance Inventory Survey	- Updating work for the road maintenance inventory by DRBFC, which was prepared in 1 <sup>st</sup> Filed Work
2) Update of database	- Updating of the database by DRBFC staff - Database was improved so as to estimate rough repairing cost in the database for budget planning by DRBFC

3) Maintenance plan based on the database	<ul style="list-style-type: none"> <li>- Training of input of data to the database was done</li> <li>- By using the improved database, rough cost for repairing works was estimated in the database according to the results of updating of road maintenance inventory.</li> </ul>
1.2 Report on Road Maintenance Plan	<ul style="list-style-type: none"> <li>- Preparation of executive summary and make public relations to relevant agencies</li> <li>- After discussion with C/Ps, draft was finalized.</li> </ul>
1.3 Manual for Reporting System (Normal Condition)	<ul style="list-style-type: none"> <li>- Executive summary was prepared and make public relations so as to make roots the manual in C/Ps.</li> <li>- Finalization of this draft after discussion with C/Ps</li> </ul>
1.4 Manual for Reporting System (Disaster Condition)	<ul style="list-style-type: none"> <li>- Executive summary was prepared and make public relations so as to make roots the manual in C/Ps.</li> <li>- Finalization of this draft after discussion with C/Ps</li> </ul>
1.5 Capacity building to DRBFC staff regarding road maintenance	<ul style="list-style-type: none"> <li>- Capacity building to DRBFC through activities as mentioned in the above with OJT</li> <li>- In addition to the above, capacity building of construction plan, site management plan, etc. through the Case Study</li> </ul>

## **II. Capacity Building to IGE (Taci Tolu)**

2.1 Equipment Management System	
1) Update of inventories & logbooks	<ul style="list-style-type: none"> <li>- Guidance and training so as to update of database for equipment management by IGE staff, which database was prepared in 1<sup>st</sup> Field Work of CBRM</li> </ul>
2) Staff training of management system	<ul style="list-style-type: none"> <li>- Training to IGE staff so as to be able to manage the equipment by themselves based on the database and training through the Case Study</li> </ul>
2.2 Training of mechanics of IGE	<ul style="list-style-type: none"> <li>- Training through lecture, OJT and the Case Study on the basis of results in 1<sup>st</sup> Field Work</li> </ul>
2.3 Training of equipment operators of IGE	<ul style="list-style-type: none"> <li>- Training through lecture, site training and the Case Study on the basis of results in 1<sup>st</sup> Field Work</li> </ul>

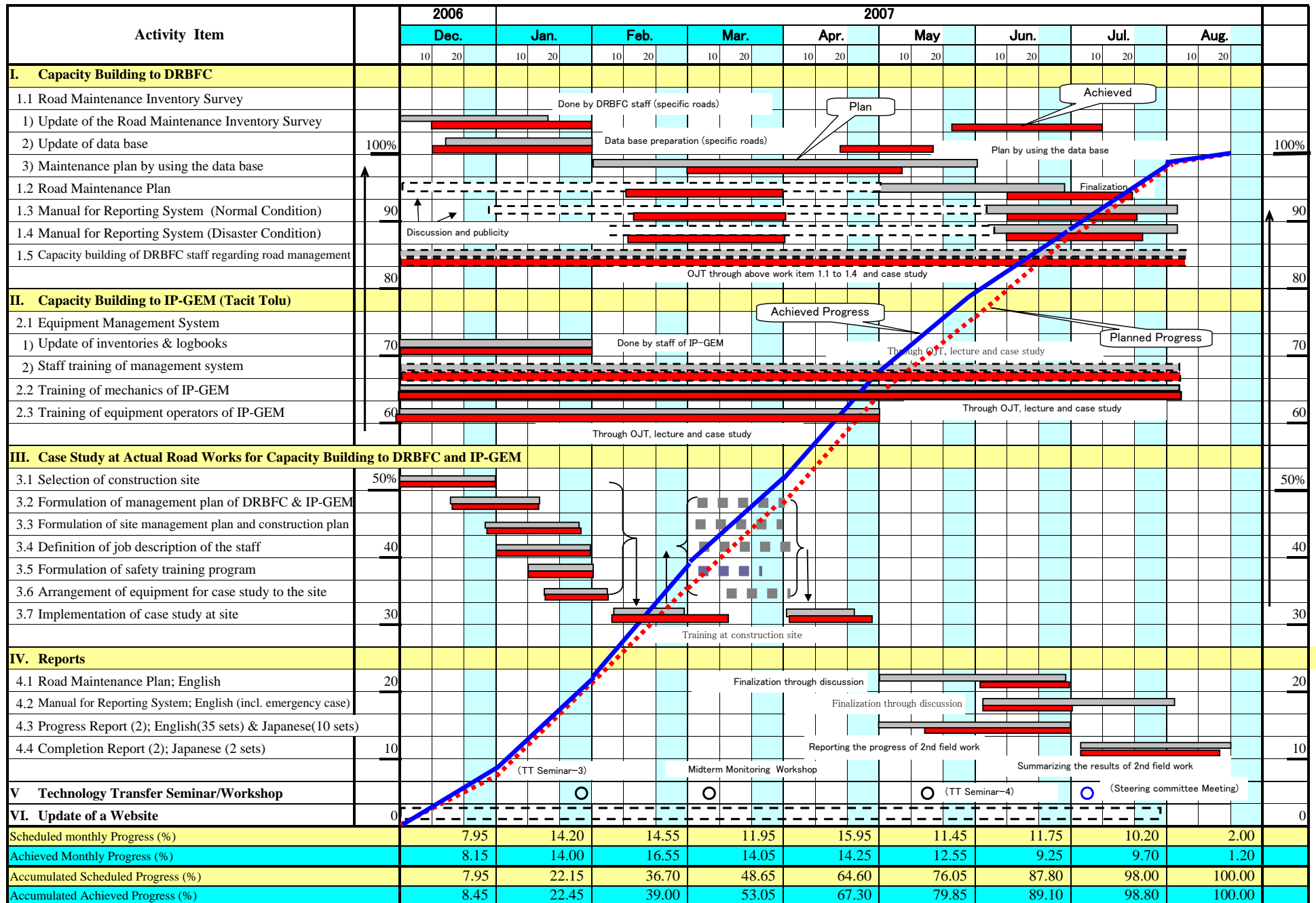
## **III. Capacity Building through the Case Study on Actual Road Works to DRBFC and IGE**

3.1 Selection of construction site	<ul style="list-style-type: none"> <li>- Selection of the construction site as the Case Study discussing with MPW (old Ministry), DRBFC and IGE</li> <li>- Site was selected at A03, 28 km point.</li> </ul>
3.2 Formulation of management plan of DRBFC & IGE	<ul style="list-style-type: none"> <li>- It is indispensable for the construction works under direct management of the Government (force account basis) that the works should be executed in close cooperation with DRBFC &amp; IGE.</li> <li>- In order to execute the works with cooperation of DRBFC &amp; IGE, management plan was formulated between them.</li> </ul>
3.3 Formulation of site management plan and construction plan	<ul style="list-style-type: none"> <li>- Management plan at the construction site for the Case Study was formulated between DRBFC &amp; IGE.</li> </ul>
3.4 Definition of job description of the staff	<ul style="list-style-type: none"> <li>- Definition of job description was planned to staffs that were participated on the Case Study.</li> <li>- Training program was prepared based on the job description.</li> </ul>



3.5	Formulation of safety training program	<ul style="list-style-type: none"> <li>- Safety planning for traffic, labors, mechanics, operators during construction works at the site.</li> <li>- Safety training to mechanics and operators during the Case Study at site.</li> </ul>
3.6	Arrangement of equipment to the site for the Case Study	<ul style="list-style-type: none"> <li>- Arrangement of equipment of IGE to the Case Study site after lease agreement between DRBFC &amp; IGE and after definition of job description</li> </ul>
3.7	Implementation of the Case Study at the site	<ul style="list-style-type: none"> <li>- Implementation at the construction site for the Case Study so as to train the staff of DRBFC &amp; IGE. The Case Study had been implemented in February and April 2007.</li> <li>- As mentioned in the above item 3.2 – 3.6, capacity building to DRBFC &amp; IGE had been done from the time of preliminary study for the Case Study.</li> </ul>
<b>IV. Reports</b>		
4.1	Road Maintenance Plan; English	<ul style="list-style-type: none"> <li>- Draft Road Maintenance Plan on Arterial Roads was finalized based on the activities in 2<sup>nd</sup> Field Work, Phase 2 and discussion with C/P agencies.</li> </ul>
4.2	Manual for Reporting System; English (incl. emergency case by disaster)	<ul style="list-style-type: none"> <li>- Draft Manuals for Reporting System in normal conditions and disaster conditions were finalized based on the activities in 2<sup>nd</sup> Field Work, Phase 2, and discussion with relevant agencies</li> </ul>
4.3	Progress Report (2); English & Japanese	<ul style="list-style-type: none"> <li>- Activities and results carried out in 2<sup>nd</sup> Field Work, Phase 2, was summarized and submitted as Progress Report (2). After 24 months from beginning of CBRM including interruption period, the report was summarized in June 2007.</li> </ul>
4.4	Completion Report (2); Japanese	<ul style="list-style-type: none"> <li>- Activities in 2<sup>nd</sup> Field Work were summarized in the completion time of 2<sup>nd</sup> Field Work, Phase 2, of CBRM.</li> </ul>
<b>V. Technology Transfer Seminar/Workshop</b>		
		<ul style="list-style-type: none"> <li>- Midterm monitoring workshop was held after the Case Study, Phase 1 in March 2007. Main topics of the workshop were progress of CBRM, the Case Study. Staff of C/P agencies (DRBFC &amp; IGE) presented as to the above issues. And, after 2<sup>nd</sup> Case Study, No. 4 technology transfer seminar was held in May 2007.</li> <li>- Joint Steering Committee (JSC) meeting was held on July 2007 after submission of Draft Progress Report (2).</li> </ul>
<b>VI. Update of a Website</b>		
		<ul style="list-style-type: none"> <li>- Updating timely the web site of CBRM, which was prepared in 1<sup>st</sup> Field Work of CBRM in homepage of JICA</li> </ul>

Figure 3.3 Work Progress in 2<sup>nd</sup> Field Work, Phase 2



Source: Data of CBRM

### 3.4.3 Capacity building to DRBFC

#### (1) Road maintenance inventory survey

In order to realize the capability that road maintenance works should be planned and executed by DRBFC itself, they had to start from the work to survey the road, to identify the defect and to make the inventory as the database for road maintenance. In order to have the road maintenance inventory by DRBFC, CBRM had executed the training for road inventory survey and the road maintenance database following activities in 1<sup>st</sup> Field Work.

In 2<sup>nd</sup> Field Work, Phase 2, as a result of improvement of the road maintenance database which was prepared in 1<sup>st</sup> Field Work, the road inventory survey sheet was also improved as same style as the database input sheet.

In 2<sup>nd</sup> Field Work, there was a request from DRBFC whether the database could be used to plan the budget as the sort of system or not. According to the request of DRBFC, CBRM improved and developed the new function to be added in the database soft-ware so as to be able to estimate the roughly repairing cost against defect portions in the database. This estimation could be done by using the unit cost of typical repairing works against kinds of defects and their quantities which were indicated in the database.

The typical construction cost was studied at the meeting that was mobilized in the “Engineers Meeting” organized by the Chief of Operation and Regional Engineers. The establishing of the typical repairing cost had been discussed starting from why it is needed to establish the typical repairing cost. And then, the meeting was expanding to standardization of road structure, design procedure of the road structure, comparison and analysis of the unit price for estimation work and understanding of the database software. Updating results of the database was submitted to DRBFC in July 2007.

#### (2) Road Maintenance Plan on arterial roads in East Timor

“Draft Road Maintenance Plan” was prepared, explained and submitted to C/P agencies in January 2006 in 1<sup>st</sup> Field Work so as to take their opinions and finalize this draft one in 2<sup>nd</sup> Field Work.

During 2<sup>nd</sup> Field Work, Phase 2, of CBRM, the executive summary for “Draft Road Maintenance Plan” was prepared and translated in Tetum language. In order to familiarize the report to staff of DRBFC and MPW (old Ministry), the executive summary was submitted to DRBFC 50 sets of Tetum version and 15 sets of English version in March 2007. The report was widely checked by staff of DRBFC and MPW (old Ministry) and was looked for any opinions about the report.

Moreover, the meetings regarding “Draft Road Maintenance Plan” were held two times at MPW (old Ministry) in June 2007 in order to seek opinions widely from the staff. Based on the results of the meetings and opinions received from the staff, “Draft Road Maintenance Plan” was finalized and submitted in July 2007 to C/P agencies.

(3) Manual for Reporting System on Road Maintenance between Central Office and Regional Office (Normal Condition)

There are five (5) Regional offices such as Dili, Baucau, Same, Maliana and Oecussi, covering whole area of the country under DRBFC of MPW. Regional offices are governed by Operation Section of DRBFC.

Maintenance works for all arterial (national) roads are covered by the respective regional offices concerned. In addition to the above arterial (national) roads, respective regional offices cover also the district, urban, and rural roads in the area concerned. Total length of all road networks including urban/district / rural roads reaches around 6,030 km in East Timor.

The reporting system between central office and regional offices of DRBFC during processing of road maintenance works was not cleared. In order to carry out the systematic road maintenance works by DRBFC itself, it had been required that some reporting system between the central office and regional offices would be established in DRBFC.

For standardization and establishment of reporting system between the central office and regional offices of DRBFC, "Draft Manual for Reporting System" was prepared in 1<sup>st</sup> Field Work. The draft manual was submitted and explained to C/P agencies on January 2006 and had been widely looked for opinions from C/P agencies.

In 2<sup>nd</sup> Field Work, Phase 2, the executive summary of the draft manual was prepared in March 2007 by CBRM in English version and Tetum version. The executive summary was submitted 50 sets of Tetum version and 15 sets of English version to DRBFC/MPW (old Ministry) so as to familiarize it to the staff and seek any comments from the staff regarding the draft manual. Moreover, meetings as to the manual were held in two times in June 2007. Based on results of meetings, the draft manual had been finalized in July 2007 and submitted to C/P agencies.

(4) Manual for Reporting System on Road Maintenance in Emergency Case by Disaster

Emergency maintenance works are the immediate repair to roads defected by heavy rains, flooding, landslides, and etc. For this type of maintenance, urgent activities are required so as to secure the traffic safely in the country.

When regional offices or the central office is reported a severe damage of road due to disaster, emergency inspection should be undertaken. After emergency inspection is carried out, urgent activities are necessary in order to recover the traffic at the places blocked by the disaster. Firstly, temporary works should be planned as countermeasure works for the traffic passing taking into careful considerations of technical viewpoints for the traffic. Emergency maintenance works require urgent actions to recover the road traffic blocked by disaster. Reporting system for emergency maintenance is different to the reporting system for normal maintenance works such as routine and periodic maintenance. Special manual for reporting system at disaster time, therefore, was required. "Draft Manual for Reporting System in Emergency Case by Disaster" was prepared in 1<sup>st</sup> Field Work of CBRM. It had been explained and submitted to C/P agencies in January 2006 so as to widely look for opinions for it.

During 2<sup>nd</sup> Field Work, Phase 2, the Draft Manual was summarized as an executive summary in English version and Tetum version. These executive summaries were submitted to C/P agencies 15 sets of English version and 50 sets of Tetum version in March 2007 so as to familiarize the manual and to seek widely opinions from the staff. Moreover, meetings as to the manual were held in June 2007 so as to finalize the draft one. Based on the results of the meetings, the manual was finalized and submitted in July 2007 during 2<sup>nd</sup> Field Work of CBRM.

(5) Capacity building to DRBFC as to road maintenance on arterial roads

Activities for capacity building to DRBFC regarding the road maintenance on arterial (national) roads in East Timor had been done in various approaches by mainly on the job training (OJT) style day after day. Repeating approach for several kinds of issues is the most efficient methods to the staff of DRBFC as to capacity building of road maintenance. Numbers of staff trained by CBRM and involved in the seminar had been 351 man-days, 11.70 man-months through 1<sup>st</sup> and 2<sup>nd</sup> Field Work as shown in following [Table 3.4](#).

**Table 3.4 Number of Staff of DRBFC involved in CBRM Activities**

First (1 <sup>st</sup> ) Year		Second (2 <sup>nd</sup> ) Year	
Seminar, Activity Item	man-days	Seminar, Activity Item	man-days
Seminar for road maintenance inventory	26	Road condition survey	12
Seminar for road maintenance inventory survey	23	Road maintenance database	25
Road condition survey	40	Unit construction cost for database	28
Seminar for collection of data to input the database	15	Case study	108
Site seminar at Japanese Grant Aid project	20	Site seminar at the Case Study	26
		Regional engineer meeting	28
Total man-day	124	Total man-days	227
Total man-month	4.14	Total man-months	7.57
First (1 <sup>st</sup> ) Year•Second (2 <sup>nd</sup> ) Year Total :351 M/D、11.70 M/M			

Source : Data of CBRM

Capacity building activities to DRBFC in 2<sup>nd</sup> Field Work are summarized below:

**【Road maintenance inventory survey】**

- By using Km posts set in 1<sup>st</sup> Field Work of CBRM and results of road maintenance inventory survey, updating for road maintenance inventory survey had been done with CBRM experts and DRBFC staff. Especially, staffs of Dili regional office had carried out in cooperation with CBRM experts through detail instruction by experts. Other regions had been trained by the seminar at Dili so as to do the updating of road maintenance inventory survey by them. In addition, CBRM local staff had joined the updating work in Baucau, Same and Maliana region.
- According to CBRM activities during 2<sup>nd</sup> Field Work, importance for road maintenance inventory survey to make the maintenance plan had been gradually recognized and familiarized in all staff of DRBFC. Periodical road maintenance inventory survey is the

most important issue for proper road maintenance work.

#### **【Database for road maintenance inventory】**

- Database for road maintenance inventory survey was modified from the one prepared in 1<sup>st</sup> Field Work of CBRM in order to make more simply and more easy use and to calculate and summarize the rough costs for repairing works at defect portions automatically in the database. By the result of modification, the database had get more useful for DRBFC since they could estimate the required budget for road maintenance works by using the database as a result of road maintenance inventory survey.
- CBRM trained the staff of Dili regional office at actual site of road how to use the database and how to survey and collect the road maintenance inventory. On the other hand, for the staff of other regional offices had been trained by the seminar at Dili and by getting some opportunities to train and instruct them with repetition day after day.
- Through activities of CBRM, staff of DRBFC had been recognizing the importance of periodical inspection of road condition and usage of the road maintenance database in order to make road maintenance works properly and systematically.

#### **【Road Maintenance Plan and Manual for Reporting System; Normal and Disaster】**

- “Draft Road Maintenance Plan” and “Draft Manual for Reporting System in Normal and Emergency Condition by Disaster” had been prepared, explained and submitted to C/P agency in 1<sup>st</sup> Field Work. During 2<sup>nd</sup> Field Work (Phase 2) of CBRM, the executive summary for them were prepared and translated in Tetum language. In order to familiarize these reports to staff of DRBFC and MPW (old Ministry), the executive summaries were submitted to DRBFC 50 sets of Tetum version and 15 sets of English version. These reports were widely checked by staff of DRBFC and MPW (old Ministry) and were looked for any opinions about draft ones.
- These reports were finalized taking into accounts of comments through above activities and results of two times meetings held on June 2007 and submitted to C/P agencies.
- It would be expected to plan and execute the maintenance work on arterial roads by DRBFC itself by these reports. These reports describe some kinds of basic and fundamental issues to execute the maintenance works and to establish the reporting system between the central office and regional offices of DRBFC.

#### **【Case Study】**

- Two times of the Case Study in close cooperation with DRBFC and IGE were executed in February and April 2007 during 2<sup>nd</sup> Field Work of CRBM.
- With executing the Case Study, DRBFC had experiences of lease contract for the equipment of IGE and payment to IGE by using a government budget for road maintenance works. This would be useful for DRBFC in order to execute the road works as an In-house project or recovery works in disaster, etc. by using the construction equipment of IGE.
- Through the implementation of the Case Study, staff of DRBFC had been trained what

kinds of preparatory works were required and how to execute remedial works at junction points between district road and national road. Many junction points on arterial roads to the district roads are damaged by rain flood due to shortage of drainage facilities from the district road to the arterial road in the country.

- Trough the Case Study, staff of DRBFC had understood that proper construction works for base, sub-base course and road bed was one of the most important issues to repair the arterial (national) road. They also had learned how to get the base course and sub-base course material from river bed during the Case Study.

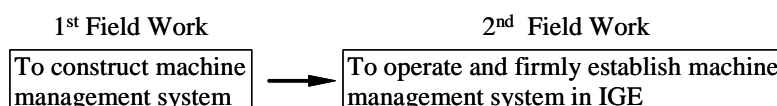
**【Seminar and meetings】**

- During 2<sup>nd</sup> Field Work of CBRM, several seminars and meetings had been held. Trough those meetings and seminars, it would be expected that staff of DRBFC had recognized and enlightened the importance of road maintenance inventory survey, database for road maintenance inventory, construction method for repairing works, design standard for national road and district road and etc. Outlines of meetings and seminar are mentioned hereinafter.
- Especially, Joint Meeting between DRBFC and IGE and Engineer’s Meeting which were started in 2<sup>nd</sup> Field Work would be very useful for DRBFC to execute systematic road maintenance work by DRBFC itself.

**3.4.4 Capacity building to IGE**

(1) Equipment management system for IGE

Technical assistance to develop construction equipment management system for IGE had been targeted to manage main machines effectively and systematically. Timorese counterpart personnel (C/P) were six (6) administrative staff (section chiefs) of IGE and technology transfer had been carried out by a jointly effort between CBRM experts and Timorese C/P by a steps showing below:



At the time when CBRM project was started, IGE had just started its operation and neither established its organization nor construction machine management system yet. It was in the state of groping in the dark for measures to cope with difficulties. In construction machine management system, CBRM had set a basal conditions that i) function of IGE’s organization should be boosted by clearly defining responsibilities of each section, ii) operation of machine management system should be simplified by introducing database, iii) IGE personnel who should be a core person to lead the project operation should be trained in the process of the construction machine management system.

In 2<sup>nd</sup> Field Work, technical guidance activity was aiming at the improvement in machine management operation so that IGE personnel would carry out machine management independently and efficiently. The technical guidance activity was being carried out mainly

by means of OJT through daily work and "the Case Study", an actual road maintenance work (practice) carried out jointly with DRBFC. Workshops and seminars were also being held as a means of improving capacity of IGE personnel. Moreover, while aiming at the improvement in machine management operation, CBRM were also striving to ask machine users to understand IGE's machine management system such as sharing of maintenance expense and operation cost through workshops and seminars. .

The contents and procedure of machine management work, division of duties among sections of IGE, and preparation of database program were confirmed, formalized and carried out during 1<sup>st</sup> Field Work of CBRM. In 2<sup>nd</sup> Field Work, technical guidance activity had been aiming at the improvement in machine management operation that IGE personnel should learn to carry out machine management independently and efficiently. The technical guidance activity was being carried out mainly by means of OJT through daily work. Workshops and seminars were also being held as a means of improving capacity of IGE personnel.

At the Case Study (Joint Road Maintenance Practice of IGE and DRBFC) which was carried out between February and April, 2007, a series of OJT such as planning of project operation, preparation of machines' lease agreement, site management, fuel supply, and collection of lease charges had been put into practice. In database management, three (3) selected IGE personnel had been given training on how to use/operate database for three (3) months. From May, 2007, one selected IGE staff had been given training as a prospective person in-charge of database management.

(2) Mechanic training

The target of the mechanic training in 1<sup>st</sup> Field Work was designed so that IGE's mechanics could acquire basic knowledge, which was needed to carry out machines' maintenance and repair including safety in work operation.

In 2<sup>nd</sup> Field Work, mechanic training was put emphasis on improving the mechanics' knowledge in the structure and the function of main component parts, and to make mechanics build up their experience in maintaining/repairing actual machines as many machines/many sort of trouble as possible. Lecture and workshop practices had been carrying out as main methods to train mechanics. On the Job Training (OJT) was adopted as a main method of workshop practice in order to conduct mechanic training without interrupting IGE's daily operation and to cope with machine troubles as flexibly as possible. All eighteen (18) IGE mechanics participated as trainees in workshop practice (OJT). Two (2) senior mechanics that were not counted as trainee were also involved in the practice session as an assistant to CBRM expert. The followings are mentioned the mechanic training:

**【Outline of mechanic training】**

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Theory : Diesel engine fuel system (details), How to read electric wiring diagram, Power train (details), Hydraulic system (details)

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Practice : Periodical maintenance, Repair, Disassembly and assembly (Engine, Power train, Brake system, Steering system, Hydraulic system)(repeated training), Comprehensive training in case study project

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### 【Training course】

In 2<sup>nd</sup> Field Work, mechanic training was carried out for seven (7) months from January to July, 2007. CBRM expert had taken charge of lectures on theory, while two (2) senior mechanics of IGE had taken responsibilities on practice with an assistant of CBRM expert. Workshop practice was being targeted on repeated practice on periodic maintenance, disassembly and assembly of main components and repairing of actual machines. In some sorts of machine troubles such as troubles of electric devices and hydraulic devices which were difficult to cope with by IGE mechanics, a crash training program that was concentrated on specific machine trouble were conducted whenever the need arose.

### 【Class work (theory)】

Class work was concentrated upon the structure and the function of main components of the construction equipment. Subjects for lecture were being synchronized with the OJT (workshop practice) as much as possible in order to deal with the machine trouble which occurs unexpectedly. Class work was also spent much time on the theory of the electric devices which was one of trainees' weakest subjects. In this subject, locally made training materials and actual electric devices such as starting motor and alternator were used in the experiment to help trainees' understanding.

### 【Workshop practice (OJT)】

In 2<sup>nd</sup> Field Work, workshop practice was targeted on repeated practice on periodic maintenance, disassembly and assembly of main components and repairing of actual machines. In some sort of machine trouble such as troubles of electric devices and hydraulic devices which were difficult to cope with by IGE mechanics, a crash program concentrated on specific machine trouble were conducted whenever the need arose.

## (3) Operator training

### 【Outline】

Almost two years passed since IGE had started construction machine operator training with a help of JICA since CETRAP period. Although many trainees who were attended the training since CETRAP period were already deployed to the various construction sites, many trainees who were enrolled in the training were yet to be capable to work at the actual construction sites due to lack skills.

In 2<sup>nd</sup> Field Work, IGE operator training was put an emphasis on raising their skill in operating construction machines for level "D" to level "C". Outline of operators training in 2<sup>nd</sup> Field Work is summarized below:

- Basic training (Bulldozer, Excavator)
- Applied training (all equipment in the Case Study)
- Training for Asphalt Distributor
- Safety training (KYT)
- Preventive maintenance (theory, daily maintenance)

Up to 2<sup>nd</sup> Field Work, the following operators had been trained by CBRM.

Training	No of Trainees	Period	Equipment
CBRM 2 <sup>nd</sup>	15	Dec.,2006 ~ Apr., 2007 (5 M)	Main 4 types + ASD
CBRM 1 <sup>st</sup>	20	Aug., 2005 ~ Nov., 2005 (5 M)	Main 4 types + Crusher
CETRAP (Ref.)	11	Jul.2004 ~ Mar.2005 (6.5 M)	Main 4 types + Crane

\*1: A number of trainees show the number that had been attended the training since CETRAP period.

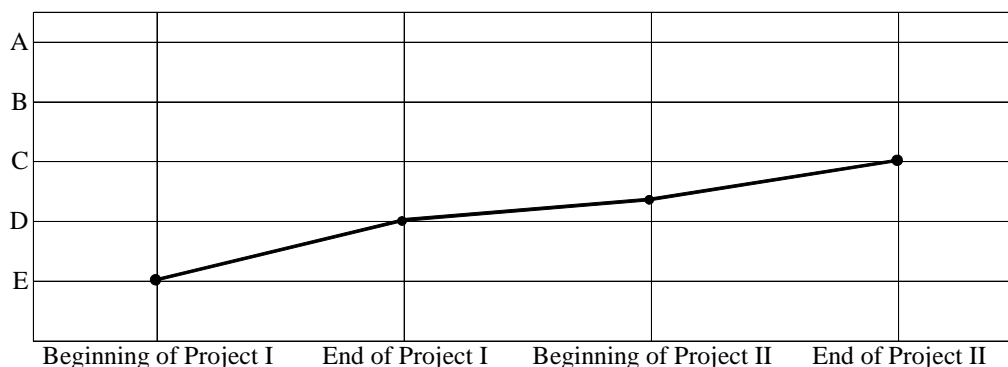
\*2: "Main 4 types" means Bulldozer, Hydraulic Excavator, Motor Grader and Wheel Loader.

\*3: "ASD" means Asphalt Distributor which is a self-traveled asphalt spreader.

Source : Data of CBRM

### 【Progress of technical levels of operators】

The levels of skills of trainees were examined by average levels of main 4 types. Training had been progressed as scheduled. Almost all trainees got up to "Level-C" of technical levels which could be operated with simple construction works at actual site. Though technical levels would be different person to person, it might be supposed that technical levels of operators of IGE would be certainly grade up. Progress of technical levels of operators is shown in [Figure 3.4](#).

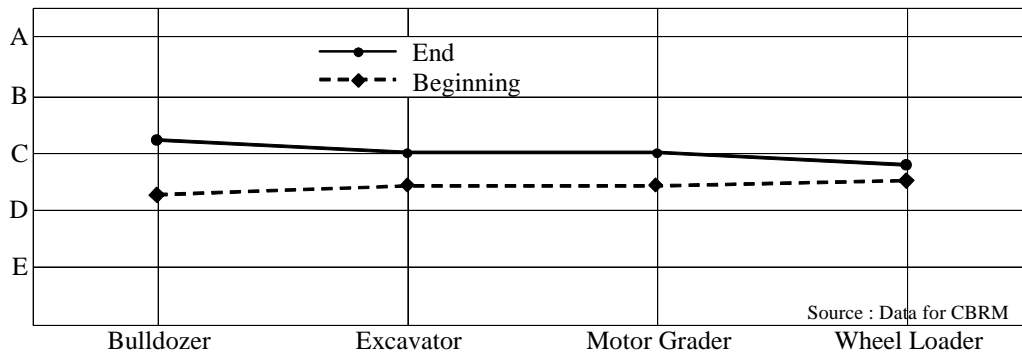


Source : Data for CBRM

Level	Brief Description of Level
A	- As an operator, he can operate the equipment at any kinds and conditions of actual working sites.
B	- As an operator, he can operate the equipment at some limited kinds and conditions of actual working sites.
C	- As an operator, he can operate the equipment only for simple works at the actual working sites.
D	- He can operate the equipment as only assistant operator at the actual working sites.
E	- He can not operate the equipment at any actual working sites.

**Figure 3.4 Progress of Technical Level of Equipment Operators of IGE (average)**

[Figure 3.5](#) shows average levels of Main 4 types after training in 2<sup>nd</sup> Field Work.



**Figure 3.5 Average Technical Levels for Main 4-types of the Equipment in 2<sup>nd</sup> Field Work**

**【Asphalt distributor (ASD) training】**

CBRM carried out the training for Asphalt Distributor in 2<sup>nd</sup> Field Work. Five (5) operators were trained in this program, and their technical levels were raised to “C”.

**【Safety training】**

KYT (training for prevision of danger) is CBRM main training for safety. KYT is a visual training which appeals to operator’s eyes. KYT teaches operators not to stand under the shelf where unexpected material falls down, instead that they dodge a falling material lightly from the shelf. So far there had no accident during 2<sup>nd</sup> Field Work.

**3.4.5 Capacity building through the Case Study**

(1) Preliminary study

Preliminary study for the Case Study was required in order to carry out the construction works smoothly on the arterial roads with joint operation between DRBFC and IGE. Proper implementation of preliminary study for the works is one of the most important factors so as to execute the construction works with good quality, keeping the construction schedule and safety works. Taking into account for the above, capacity building to DRBFC and IGE had been carried out from the stage of preliminary study. Preliminary study report was prepared by CBRM to implement the Case Study. This report was distributed and explained to C/P agencies. The Project (CBRM) made efforts to public relations for implementation of the Case Study in C/P agencies including MPW (old). The following shows the contents of preliminary study to implement the Case Study.

**【Contents of the Preliminary Study for the Case Study】**

Item	Subject	Contents
1	Introduction	- Purpose of implementation of the Case Study - Implementation period of the Case Study in 2 <sup>nd</sup> Field Work - Reason of implementation of the Case Study
2	Selection of the Case Study site	- With due discussions and consideration of intensions of MPW (old Ministry), DRBFC, MTC (old Ministry) and IGE, selection of the site was carried out at the places on arterial roads to be required the maintenance works. Specially, the following items were taken to select the site: a) It is planned for the site to be implemented the maintenance works by DRBFC

- on the arterial roads.
- b) Land acquisition for the site is not necessary.
- c) The maintenance work to be implemented by the Case Study would be some kinds of the model for maintenance works and demonstration effects.
- d) Maintenance works carried out by the Case Study should effect immediately for many beneficiaries after completion of construction works.
- e) Relatively near from the regional office, especially in this period, the site should be decided taking into considerations of the site safety due to the situation of East Timor.
- Taking into considerations of the above, the good place for the Case Study was selected at 28 km point of A03 arterial roads, Aipelu Village, near Riquicia, where is the junction point of A03 and the district roads.

- |   |   |   |
|---|---|---|
| 3 | Formulation of Management Plan of DRBFC & IGE | <ul style="list-style-type: none"> <li>- It would be very important to implement the road works, which will be carried out by force-account basis of MPW, especially in emergency case, with close cooperation between DRBFC and IGE. Training for close cooperation between both departments was one of main purposes to do the Case Study.</li> <li>- It was necessary for DRBFC and IGE to prepare the management plan of the Case Study with close discussions and cooperation before implementation of the Case Study.</li> <li>- Some regulation and cooperation plan would be required in order to lease the construction equipment form IGE to DRBFC.</li> <li>- The following management plan for DRBFC and IGE, respectively, would be required in order to do the Case Study at actual construction site.</li> </ul> |
|---|---|---|

**(DRBFC)**

- a) Reconnaissance survey at the construction site
- b) Construction plan (basic design, construction method, construction period, rough estimation of work quantities and construction cost), required budget arrangement
- c) Plan for required construction equipment at site
- d) Requesting to IGE for required construction equipment
- e) Consultation with IGE for lease regulation for the equipment and preparation of agreements with IGE
- e) Topographic survey, if necessary, detailed design and estimation of work quantities
- f) Plan of construction system (required engineer/supervisors, quality control method, progress control method)
- g) Plan of the completion report after implementation (final quantities and cost, final progress, etc.)

**(IGE)**

- a) Discussion and agreement conclusion with DRBFC/MPW (old Ministry) as to the lease conditions for the construction equipment, conditions of payment method including advance payment, etc.
- b) Arrangement for the construction equipment required by DRBFC.
- c) Maintenance of the equipment before allocation of the equipment to the site and its maintenance record.
- d) Arrangement of mechanics and operators in-charge.
- e) Daily maintenance and periodical maintenance during construction at site.
- f) Arrangement of required fuel and grease/oil at site.
- g) Allocation of the equipment to the site and its time
- h) Report after completion of lease the equipment (working days and hours of the equipment, fuel consumption record, etc.).
- i) Request to DRBFC the cost to be used at the site according to the lease agreement between IGE and DRBFC

- 
- 4 Formulation of Site Management Plan and Construction Plan - It would be necessary to prepare the construction plan and site management plan by DRBFC and IGE. The following matters would be required as to the site management plan for both DRBFC and IGE.
- With leadership and responsibility of DRBFC, site management should be carried out on the construction site. It is important to recognize that the construction on the road would be done with full responsibility of DRBFC.

**(DRBFC)**

- According to the construction plan and method decided in the above item 3), site management plan should be formulated.
  - a) Progress control : based on the construction method, work quantities, numbers of construction equipment, progress and schedule chart should be prepared, and progress control should be carried out according to the chart.
  - b) Quality control : based on the quality control plan for the construction materials (embankment material, concrete, aggregates, stone, etc.), earth works, concrete works, asphalt works, stone works, etc.
  - c) Quantity control : based on the detailed work quantity estimation, final quantity should be managed at site.
  - d) Cost management : management for construction cost comparing with the estimated cost or budget.
  - e) Man-power control : management of construction engineer(s), supervisor(s), labors, etc.
  - e) Material control : control for construction materials to be required at site (cement, aggregates, stone, asphalt, etc.) including their required volumes and their acquisition method and their quality.

**(IGE)**

- Based on the management plan for IGE as mentioned in the above item 3), site management plan of IGE should be examined as following matters:
  - a) Man-power control : arrangement and management for equipment operators, mechanics and safety control persons, etc.
  - b) Equipment maintenance plan : establishment of daily maintenance, periodic maintenance and recording/reporting system.
  - c) Equipment operation : establishment for recording / reporting system of operation hours and kinds of work.
  - d) Training program for equipment operators, mechanics at actual construction site.
  - e) Consideration for safety keeping of equipment and materials at construction site.

- 
- 5 Definition of Job Description and Training Program - Establishment for responsible executing system for respective trainees in charge for the Case Study.
- For successful implementation of the works, it is essential to define the job description for persons in charge for construction works at site. As a result of definition of job description, cooperative works between civil engineers, supervisors, equipment mechanics and operators can be expected. Following organizations/persons in DRBFC and IGE would be required to definite their job description.

**(DRBFC)**

- Central office of DRBFC, regional office of DRBFC, road engineers, supervisors, technicians for construction works.

**(IGE)**

- Definition of job description for IGE.
- Definition of job description of mechanics.
- Operators job description
- Definition of job description for persons in charge for equipment management.

- 
- 6 Formulation - It is necessary to execute the safety construction works with close cooperation of
-

of Safety Training Program	<p>DRBFC and IGE.</p> <ul style="list-style-type: none"> <li>- For safety construction works, IGE with close cooperation of site engineer/supervisors of DRBFC should do at the site, since equipment would be operated and controlled by IGE.</li> <li>- The following matters would be required for IGE regarding the safety construction: <b>(IGE)</b></li> <li>- Establishment of safety training plan for mechanics, operators, labors and traffic around the construction site.</li> <li>- Required safety training for the Case Study would be itemized as follows: <ul style="list-style-type: none"> <li>a) Safety control during operation of construction equipment.</li> <li>b) Safety control at the time of starting of construction equipment.</li> <li>c) Safety control during construction works.</li> <li>e) Safety after finishing of daily construction work.</li> </ul> </li> <li>- Based on the plan considered in above, safety construction training was carried out at site. Taking the danger prevision training (KYT training) into accounts, the training was carried out at actual construction site.</li> <li>- Discussion for danger forecasted in daily works and its counter-measures should be considered. Practice to confirm of safety by point by finger with denomination should be considered.</li> <li>- During construction works, should arrange staffs in charge for safety construction and traffic guidance at construction site on the road.</li> <li>- The following materials would be required for safety training at site: <ul style="list-style-type: none"> <li>a) Guide plate to indicate the construction works on the road.</li> <li>b) Handy flag to guide the traffic during construction.</li> <li>c) Whistle and safety cap</li> </ul> </li> </ul>
7 Arrangement of Equipment for the Case Study to the Site	<ul style="list-style-type: none"> <li>- Transportation of the construction equipment to the site, which should be carried out by IGE. <b>(IGE)</b></li> <li>- Arrangement of the equipment to be requested by DRBFC and maintenance before the allocation.</li> <li>- Transportation the construction equipment to the site timely.</li> <li>- During construction period, secure of safety keeping of the equipment.</li> <li>- After construction, carry out from the site to IGE.</li> <li>- Record the equipment operation hours and input the database its results.</li> </ul>

Source : Data of CBRM

## (2) Implementation of the Case Study

After the above preliminary study, the Case Study had been executed dividing two phases. Phase 1 had been executed during from February 5 to March 14, 2007 (including 7 suspense working days due to safety conditions of East Timor). Construction works in Phase 1 included quarry works of road sub-base course material and construction works of drainage facilities around the road. Phase 2 had been executed during from April 2 to April 25, 2007 after review of Phase 1 of the Case Study. Construction works in Phase 2 were repairing works of base course and surface works of roads. Outline of the Case Study is summarized as follows:

### 【Construction management】

Item	Description
1) Required engineers and supervisors at	- Dili regional engineer: Jose Cornelio Liquica supervisor: Devi Emanuel

construction site	Assistant supervisor: Jorge Tiago
2) Quality control method	<ul style="list-style-type: none"> <li>- The following quality control was done during the construction.</li> <li>a) Proof Rolling Test after completion of sub grade preparation and sub base course of the main body,</li> <li>b) Inspection of stone, aggregates and sand materials at quarry site,</li> <li>c) Careful inspection for preparation of sub-base and base course of road main body, especially grading control of gravel for sub-base and base course for the road,</li> <li>d) Careful inspection of concrete culvert setting works and construction works of stone masonry for side ditches,</li> <li>e) Water content control by measuring basket for concrete mixing.</li> </ul>
3) Progress control method	<ul style="list-style-type: none"> <li>- Progress control was no efficient due to the training efficiency.</li> <li>- Weekly check for the construction progress was done.</li> </ul>
4) Work quantities control method	<ul style="list-style-type: none"> <li>- Work quantities control was based on the work quantities estimated in the construction plan.</li> <li>- Check with weekly basis was carried out.</li> </ul>
5) Cost management method	<ul style="list-style-type: none"> <li>- Construction cost was checked on basis for actual expenditure at regional office or at site comparing with estimated cost and budget available for the construction works.</li> <li>- Hot Mix construction was additionally requested by the m central office. Asphalt paving by hot mix material was done by DRBFC itself in later.</li> </ul>
6) Man-power management method	<ul style="list-style-type: none"> <li>- Unit Price contract was agreed with inhabitants surrounded on A03, 28 km points, Aipelu village.</li> <li>- Skilled labors or technician like mason, carpenters from Aipelu village were poor skilled.</li> <li>- Equipment operators were supplied by IGE as mentioned hereinbefore.</li> </ul>
7) Construction material management method	<ul style="list-style-type: none"> <li>- Stone, gravel, sand required for the site were supplied from the quarry site arranged by DRBFC.</li> <li>- Other materials like concrete pipes, cement, etc. were also arranged by DRBFC.</li> <li>- Bitumen material was used the one which had been kept at Taci Tolu.</li> </ul>

### 【Implementation period of the Case Study】

Staff of Dili Region and CBRM experts had been controlling the time expense with the chance of meeting and communication at the site. However, because of execution of the training for operators of IGE, actual working hours was almost 7 hours per day and 5 working days in the week. Therefore 5 weeks duration in original plan was extended to 9 weeks including the 10 days disturbance by social movement in Phase 1 and 2 of the Case Study. This was evaluated as “fair” in the working hour calculation bases as shown in below.

1) Plan :	$8\text{hours} \times 6\text{days} \times 5\text{weeks} = 240\text{hours}$
2) Actual:	$7\text{hours} \times (5\text{days} \times 9\text{weeks} - 10\text{days}) = 245\text{hours}$

Source: Data of CBRM

## 【Seminar, workshop and meetings for the Case Study】

Through the activity of the Case Study, CBRM mobilized twice of site seminar and twice of presentation of the Case Study at workshop in order to make public relations for the Case Study to C/P agencies and relevant offices. Site seminars were held at the site and the workshop and the seminar were held in the memorial hole, Dili and the meeting room MPW (old Ministry).

### 3.4.6 Meetings, seminars/ workshop and website

#### (1) Meetings

In order to make smooth operation for the Project (CBRM) in 2<sup>nd</sup> Field Work, Phase 2, there were several meetings with CP personnel and agencies and relevant persons of JICA so as to share the information and problem of the Project. Outline of meetings held regularly in 2<sup>nd</sup> Field Work, Phase 2, are summarized as bellow [Table 3.5](#)

**Table 3.5 Regular Meetings (2<sup>nd</sup> Field Work, Phase 2)**

Regular Meeting	Contents of Meeting
Joint Meeting between DRBFC and IGE	- In 2 <sup>nd</sup> Field Work, Phase 2, fifteen (15) times of the joint meeting between DRBFC and IGE had been held regularly (around once in two weeks) with attendance of section chief and staff in charged. Especially, issues of the Case Study had been discussed at the meeting. Records of discussions for the joint meeting had been prepared by CBRM and distributed to relevant agencies so as to share contents of the meeting.
Engineers Meeting between the central office and regional office of DRBFC	- In addition to the meeting with staff of DRBFC held on daily activities of CBRM, five times of Engineers Meeting between regional engineers of respective regional offices had been held in Dili so as to familiarize the database of road maintenance and technical matters concerning road maintenance works.
Regular meetings at IGE	- Experts of CBRM had participated and discussed on regular meeting of IGE, which had been held once a week in the office of IGE, in addition to the meeting with daily activities of CBRM to IGE.
Progress Meeting with JICA T/L office	- Regular meeting with JICA T/L office had been held once a moth in the beginning of moth with reporting of activities in previous month and schedule of the Project in the month.
Sharing of project information with letters	- Issues concerning the management of the Project, decision matters between C/P agencies and CBRM, and other necessary information had been submitted to letters to relevant agencies so as to share the information of project activities. In 2 <sup>nd</sup> Field Work, Phase 2, fifty (50) letters had been submitted to relevant offices for CBRM.
Meeting for “Road Maintenance Plan” and “Manual for Reporting System”	- In order to make public relations and looking for comments from C/P agencies, “Draft Road Maintenance Plan” and “Draft Manual of Reporting System between the Central Office and Regional Offices in Normal Condition and in Disaster Condition” were prepared their executive summaries and translated them to Tetum Language. Their executive summaries were submitted to C/P agencies to get comments or opinions from C/P agencies. Moreover, two (2) times of meeting as to “Road Maintenance Plan” and “Manual for Reporting System in Normal and Disaster Condition” were held in June 2007. Based on results of meetings, these reports were finalized.
Joint Steering Committee Meeting	- No.3 Joint Steering Committee Meeting was held on July 6, 2007. Main agenda was results of activities of CBRM in 2 <sup>nd</sup> Field Work, Phase 2, explanation of Progress Report (2) and next schedule for 3 <sup>rd</sup> Field Work.



	<p>Though Vice Minister of MPW (old), Project Director of CBRM, scheduled to chair the meeting, it was suddenly decided that he should attend the Council Meeting of Ministers in East Timor. Therefore, permanent secretary of MPW (old Ministry), Project Manager of CBRM, chaired the meeting.</p> <p>- At this meeting, results of activities of CBRM in 2<sup>nd</sup> Field Work, Phase 2, and next schedule in 3<sup>rd</sup> Field Work of CBRM were confirmed and approved.</p>
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Source: Data from CBRM

(2) Seminars and workshop

Several times of seminar and workshop had been held in 2<sup>nd</sup> Field Work, Phase 2, with the purposes of i) to make public relations regarding activities of CBRM and its purpose, ii) to upgrade the staff realization for road maintenance works in C/P agencies, iii) to share the information of activities in the Case Study, iv) to familiarize the road maintenance database and etc. Outlines of these are summarized in [Table 3.6](#).

**Table 3.6 Outline of Seminar and Workshop (2<sup>nd</sup> Field Work, Phase 2)**

Seminar & Workshop	Date/Time	Place/ Participants	Outline of Seminar
No.3 Technology Transfer(T/T) Seminar	January 26, 2007, 14:00 ~ 16:30	Meeting Room of MPW(old) / Director of DRBFC, Staff of DRBFC, Director of DRD, Relevant staff of JICA, around 20 persons in total	<ul style="list-style-type: none"> <li>- Presentation by Dili Regional Engineer as to updating of database for road maintenance and discussions (14:00 – 15:00)</li> <li>- Practice of data input to the database lectured by Dili Regional Office (15:00 – 16:20)</li> <li>- Speech by Director of DRBFC (16:20 – 16:30)</li> </ul>
No.4 Technology Transfer Seminar	May 15, 2007, 14:30 ~ 16:30	Meeting Room of MPW (old) /Vice Minister of MPW, Permanent Secretary of MPW, Staff of DRBFC, Representatives of ADB, GTZ, EOJ, JICA, around 20 persons in total	<ul style="list-style-type: none"> <li>- Opening Speech by Vice Minister of MPW (14:35 – 14:45)</li> <li>- Presentation for the database of road maintenance inventory and the Case Study , Questions and Answer (14:45 – 16:25)</li> <li>- Closing speech by Permanent Secretary (16:25 – 16:35)</li> </ul>
No.1 Site Seminar	February 28, 2007, 09:00 ~ 12:30	The Case Study Site (A03, 28 Km, Aipelu)/ Staff of DRBFC central office and regional offices (7 staff)	<ul style="list-style-type: none"> <li>- Explanation of the Case Study at MPW meeting room</li> <li>- Inspection, explanation, discussion at the site</li> </ul>
No.2 Site Seminar	April 18, 2007, 14:30 ~ 16:30	The Case Study Site (A03, 28 Km, Aipelu), Staff of DRBFC central office (3 staff)	<ul style="list-style-type: none"> <li>- Inspection, Explanation and Discussion at the construction site.</li> </ul>
Midterm monitoring workshop	March 8, 2007, 10:00 ~ 15:30	Independence Memorial Hall, Dili, Representatives of MPW, MTC, ADB, GTZ, DRBFC Staff, IGE Staff, JICA T/L	<ul style="list-style-type: none"> <li>- Opening speech by Vice Minister of MPW (old Ministry), Project Director (10:00~10:15)</li> <li>- Presentation for progress and results achieved by CBRM and schedule from now on by DRBFC staff (10:15~10:45)</li> <li>- Presentation for the database of road</li> </ul>

		office, JICA Mission and etc. around 40 persons in total	<p>maintenance inventory survey and the Case Study, Phase 1, carried out in February 2007 by DRBFC staff (10:45~11:15)</p> <ul style="list-style-type: none"> <li>- Question and answer with attendances (11:15~12:00)</li> <li>- Lunch break (12:00~13:00)</li> <li>- Presentation for the equipment management system and training of mechanics by IGE staff (13:00~13:30)</li> <li>- Presentation as to the training for operators by IGE staff and CBRM Expert (13:30~14:15)</li> <li>- Question and answer with attendances (14:15~15:15)</li> <li>- Closing speech by Permanent Secretary of MTC (15:15~15:30)</li> </ul>
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Source: Data of CBRM

(3) Website for the Project

During 2<sup>nd</sup> Field Work, the web site for CBRM which was established in the official web site of Japan International Cooperation Agency (JICA) with English version and Japanese version had been updated timely. The web site was established aiming at sharing of data and information such as basic concept of the Project, schedule of the Project, results of the Project activities, and so on. It also aimed at collection of useful opinion from others.

### 3.5 Third (3<sup>rd</sup>) Field Work

#### 3.5.1 Outline of 3<sup>rd</sup> Field Work

Third (3<sup>rd</sup>) Field Work had been carried out following results achieved during 1<sup>st</sup> and 2<sup>nd</sup> Field Work and aiming more capacity building to C/P agencies such as DRBFC and IGE. Since 3<sup>rd</sup> Field Work was a final stage of the Project (CBRM), it was also important work to summarize whole work results achieved during the project implementation, 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> Field Work of CBRM.

The work was divided mainly into three activity categories to DRBFC and IGE under MOI following the work in 1<sup>st</sup> and 2<sup>nd</sup> Field Work. Main work items divided into three activity categories are shown below:

- a) Capacity building to DRBFC continuously following 1<sup>st</sup> and 2<sup>nd</sup> Field Work,
- b) Capacity building to IGE continuously following 1<sup>st</sup> and 2<sup>nd</sup> Field Work, and
- c) Case Study at actual construction site in cooperation with DRBFC and IGE.

In addition to the above main activities, technical transfer seminar and workshop, updating of website of CBRM, preparation of “Final Report of the Project” and “Completion Report of 3<sup>rd</sup> Field Work” had been included in 3<sup>rd</sup> Field Work. Activities of CBRM in 3<sup>rd</sup> Field Work, are summarized as below. **Figure 3.6** shows the progress of 3<sup>rd</sup> Field Work.

#### 【Outline of CBRM Activities in 3<sup>rd</sup> Field Work】

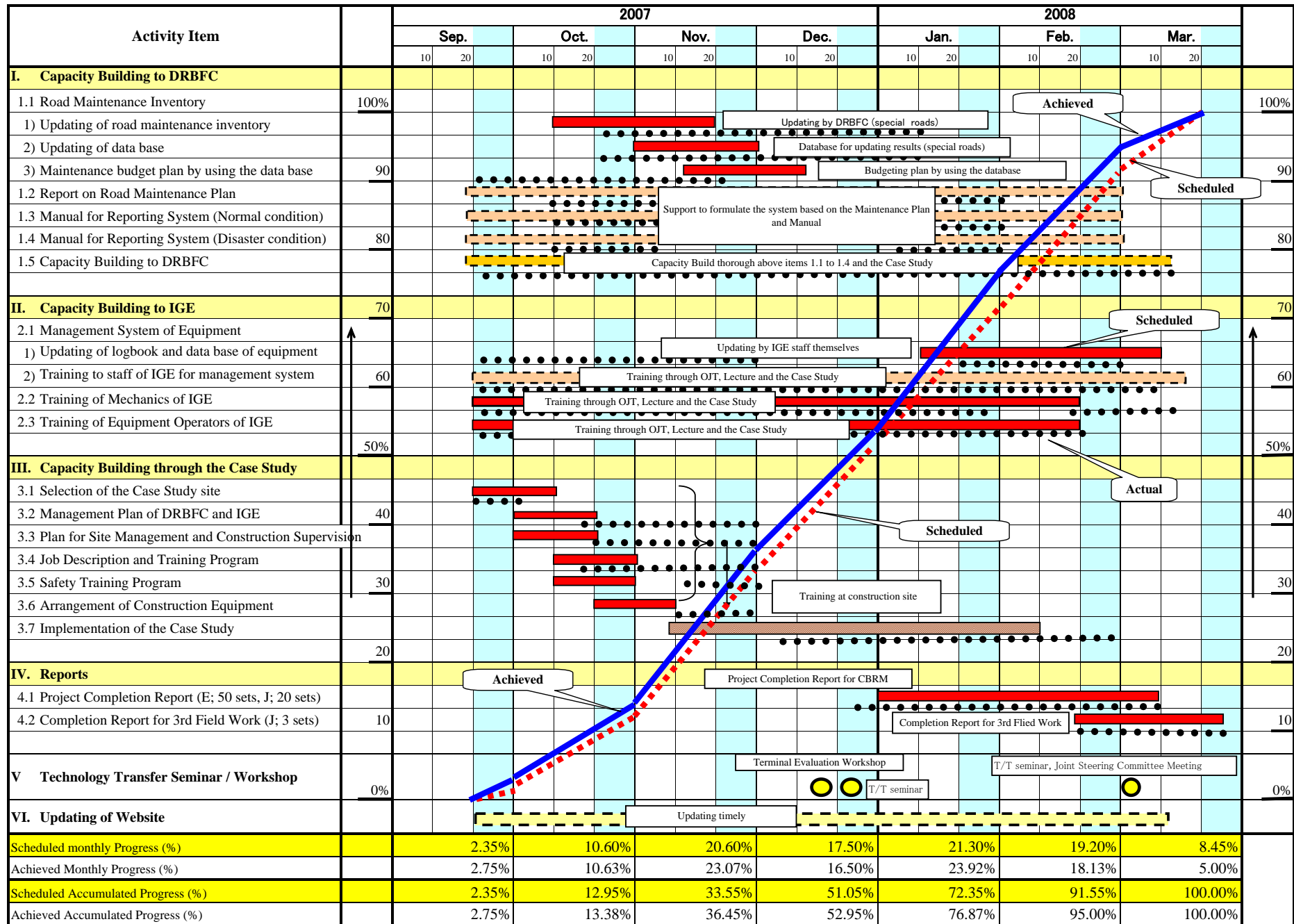
Activity Item	Contents of Activities
<b>I. Capacity Building to DRBFC</b>	
1.1 Road Maintenance Inventory Survey	
1) Update of the Road Maintenance Inventory Survey	<ul style="list-style-type: none"> <li>- Improvement of the database and finalization of the road maintenance database</li> <li>- Starting the inventory survey for the bridge maintenance database by DRBFC staff</li> </ul>
2) Update of database	<ul style="list-style-type: none"> <li>- Preparation of the bridge maintenance database according to the request of DRBFC</li> <li>- How to use and how to input the inventory data to the database had been trained through 3<sup>rd</sup> Field Work.</li> <li>- “Guideline and Instruction Book” for the road maintenance database and the bridge maintenance database had been prepared and submitted.</li> </ul>
3) Maintenance plan based on the database	<ul style="list-style-type: none"> <li>- Budget for road maintenance during five (5) years from 2008 had been planned by DRBFC using the road maintenance database with assistance of CBRM.</li> <li>- During the budget planning, prioritization of road maintenance works was decided referring to “Road Maintenance Plan”.</li> </ul>
1.2 Report on Road Maintenance Plan	
	<ul style="list-style-type: none"> <li>- Preparation of executive summary of final one and translation to Tetum language.</li> <li>- These were distributed all regional staff to enlighten the staff for road maintenance works in East Timor.</li> <li>- Prioritization of road maintenance works was adopted for budget planning referring to “Road Maintenance Plan”.</li> </ul>

1.3	Manual for Reporting System (Normal Condition)	<ul style="list-style-type: none"> <li>- Preparation of executive summary of final one and translation to Tetum language.</li> <li>- These were distributed all regional staff to enlighten the staff for reporting procedures between the central office and regional offices of DRBFC regarding to road maintenance works in East Timor.</li> </ul>
1.4	Manual for Reporting System (Disaster Condition)	<ul style="list-style-type: none"> <li>- Preparation of executive summary of final one and translation to Tetum language.</li> <li>- These were distributed all regional staff to enlighten the staff for reporting procedures between the central office and regional offices of DRBFC in case of emergency case by disaster so as to make quick actions against countermeasure.</li> </ul>
1.5	Capacity building to DRBFC staff regarding road maintenance	<ul style="list-style-type: none"> <li>- Capacity building to DRBFC through activities as mentioned in the above and OJT continuing the activities in 2<sup>nd</sup> Field Work, Phase 2.</li> <li>- In addition to the above, capacity building of construction plan, site management plan, etc. through the Case Study</li> </ul>
<b>II. Capacity Building to IGE (Taci Tolu)</b>		
2.1	Equipment Management System	
1)	Update of inventories & logbooks	<ul style="list-style-type: none"> <li>- Guidance and training so continuing the activities in 2<sup>nd</sup> Field Work, Phase 2, so as to be able to update by IGE itself.</li> </ul>
2)	Staff training of management system	<ul style="list-style-type: none"> <li>- Training to IGE staff so as to be able to manage the equipment by them.</li> </ul>
2.2	Training of mechanics of IGE	<ul style="list-style-type: none"> <li>- Training through lecture, OJT and the Case Study on the basis of results in 2<sup>nd</sup> Field Work, Phase 2.</li> </ul>
2.3	Training of equipment operators of IGE	<ul style="list-style-type: none"> <li>- Training through lecture, site training and the Case Study on the basis of results in 2<sup>nd</sup> Field Work, Phase 2.</li> </ul>
<b>III. Capacity Building through the Case Study on Actual Road Works to DRBFC and IGE</b>		
3.1	Selection of construction site	<ul style="list-style-type: none"> <li>- Selection of the construction site as the Case Study discussing with MPW (old Ministry), DRBFC and IGE</li> <li>- Sites of four places to be required repairing works were selected at the arterial road, A01, 6.6 km ~ 13.9 km</li> </ul>
3.2	Formulation of management plan of DRBFC & IGE	<ul style="list-style-type: none"> <li>- It is indispensable for the construction works under direct management of the Government (force account basis) that the works should be executed in close cooperation with DRBFC &amp; IGE.</li> <li>- In order to execute the works with cooperation of DRBFC &amp; IGE, management plan was formulated between them.</li> </ul>
3.3	Formulation of site management plan and construction plan	<ul style="list-style-type: none"> <li>- Management plan at the construction site for the Case Study was formulated between DRBFC &amp; IGE.</li> </ul>
3.4	Definition of job description for the staff	<ul style="list-style-type: none"> <li>- Definition of job description was planned to staff that were participated on the Case Study.</li> <li>- Training program was prepared based on the job description.</li> </ul>
3.5	Formulation of safety training program	<ul style="list-style-type: none"> <li>- Safety planning and training for traffic, labors, mechanics, operators during construction works at the site.</li> </ul>

3.6 Arrangement of equipment to the site for the Case Study	- Arrangement of equipment to the Case Study site by IGE according to the request of DRBFC.
3.7 Implementation of the Case Study at the site	<ul style="list-style-type: none"> <li>- Implementation at the construction site of the Case Study so as to train the staff of DRBFC &amp; IGE. The Case Study had been implemented from December 2007 to February 2008.</li> <li>- As mentioned in the above item 3.2 – 3.6, capacity building to DRBFC &amp; IGE had been done during preliminary study for the Case Study.</li> </ul>
<b>IV. Reports</b>	
4.1 Final Report on the Project ; English and Japanese	- The project activities and their results were summarized in this report. With discussion of C/Ps, this report was finalized and mentioned also some recommendations for future road maintenance works in East Timor.
4.2 Completion report for 3 <sup>rd</sup> Field Work (Japanese)	- Activities in 3 <sup>rd</sup> Field Work were summarized in this report and submitted on completion time of 3 <sup>rd</sup> Field Work.
<b>V. Technology Transfer Seminar/Workshop</b>	<ul style="list-style-type: none"> <li>- Terminal work shop was held at the period of terminal evaluation period by JICA mission.</li> <li>- Technical transfer seminars were held on December 2007 and February 2008 after completion of preparation of the bridge maintenance database and the Case Study.</li> <li>- Joint Steering Committee (JSC) meeting was held on March for Draft Final Report at terminal period of the Project.</li> </ul>
<b>VI. Update of a Website</b>	- Updating timely the web site of CBRM during 3 <sup>rd</sup> Field Work, which was prepared in 1 <sup>st</sup> Field Work of CBRM in homepage of JICA

Source: Data of CBRM

Figure 3.6 Work Schedule and Progress of 3<sup>rd</sup> Field Work



Source: Data of CBRM

### 3.5.2 Capacity building to DRBFC

#### (1) Road maintenance inventory

Third (3<sup>rd</sup>) Field Work was commenced at the stage of out-put from the database. This was the work done by DRBFC in cooperation with CBRM expert. The road condition data should be checked, sorted and summarized for the information so as to be convenient for budget planning of DRBFC. The condition data was the combination of the first survey in 2005 and the up-dating survey in 2007 and the demonstration of summary was advised to DRBFC in October 2007. DRBFC clearly understood the summary of information in the database. It was a help for their budgeting work. CBRM experts also had revised the database so as to describe the defects by the cost more clearly and to summarize the road condition for the purpose of budget planning.

As a result of understanding of the road maintenance database by DRBFC, DRBFC expected to have new database only for bridge in detail. It is also expected that the description of summary of cost in the database suits the item of budget such as “Routine Maintenance” and “Periodic Maintenance”.

In order to comply with their requests, CBRM revised the database system with the items of i) function of summary, ii) description of summary, iii) change of criteria for condition item, iv) separation of condition item for the road maintenance database and the bridge maintenance database and v) change of description for evaluation and unit cost. CBRM also produced the database only for bridge in 3<sup>rd</sup> Field Work.

Taking into considering of technology transfer to DRBFC regarding the database system, two technical staff from planning and design section of DRBFC were participated with the work of CBRM expert as OJT to revise the road maintenance database and to produce the new bridge maintenance database in 3<sup>rd</sup> Field Work. The database was submitted with guideline book and instruction book to DRBFC in February 2008.

#### (2) Capacity building to DRBFC

CBRM had executed technical cooperation about the road maintenance for DRBFC in many ways in 3<sup>rd</sup> Field Work by mainly on the job training (OJT) day after day following previous 1<sup>st</sup> and 2<sup>nd</sup> Field Work. Numbers of staff trained by CBRM and involved in the seminar, workshop and meetings are summarized as [Table 3.7](#) in 3<sup>rd</sup> Field Work.

**Table 3.7 Number of Staff of DRBFC involved in CBRM Activities in 3<sup>rd</sup> Field Work**

Activities	man-days
Seminar for database of bridge maintenance	9
OJT for production of bridge database	20
Seminar for bridge condition survey	4
OJT for data input of road database	31
OJT for revision of road database	20
Case Study	77
Regional Engineer Meeting	13
Total man-days	174
Total man-months	5.80

Source: Data from CBRM

The following summarize the activities in 3<sup>rd</sup> Field Work.

**【Database for bridge maintenance】**

- CBRM produced the database only for bridge maintenance, “Bridge Maintenance Database”, taking discussions with bridge engineer of Planning and Design Section, DRBFC. The bridge maintenance database was based on the revised road maintenance database. Activity for preparation had been executed as OJT with CBRM expert and technical staff from Planning and Design Section in order to use the database by DRBFC itself. Technology transfer seminar for trial of system was held in December 2007. Introduction of the bridge maintenance database to regional engineers was held in January 2008 with the discussion to promote the new routine work for the regional offices. The database system was handed over to DRBFC with the revised road maintenance database, guideline book and instruction book on February 2008.

**【Database Guideline and Instruction book】**

- On the mean time of revision of the road maintenance database and production of the bridge maintenance database, CBRM prepared the instruction book which explained the meaning of contents of databases and the guideline book which explained the database soft-ware system.

**【Road Maintenance Plan and Reporting System in Normal and Disaster Condition】**

- These reports were finalized in 2<sup>nd</sup> Field Work as mentioned in preceding section. In 3<sup>rd</sup> Field Work, executive summary for finalized reports were prepared and translated in Tetum Language. They were handed to all regional offices in order to familiarize and make public relations of these in all regional staff of DRBFC at the time of regional engineers meeting in DRBFC.
- These reports describe some kinds of fundamental and basic issues for making plan and reporting system between the central office and regional offices as to road maintenance work for arterial roads in East Timor. It would be expected that all staff of DRBFC have a same consciousness of road maintenance plan and reporting system in DRBFC and widely discussed the road maintenance plan and reporting system based on these



reports.

#### 【Case Study】

- The Case Study was planned and executed in 3<sup>rd</sup> Field Work following 2<sup>nd</sup> Field Work. The scheme was as same style as the one carried out in 2<sup>nd</sup> Filed Work which was the construction by DRBFC using the equipment of IGE. Repairing works for the Case Study had been started from December 2007 and completed in February 2008. The details of the Case Study in 3<sup>rd</sup> Field Work are reported in Section hereinafter.
- CBRM tried to collaborate with other JICA project through the Case Study in 3<sup>rd</sup> Field Work as much as possible. CBRM announced the information of site progress to other JICA project, “The Capacity Development of Teaching Staff in the Faculty of Engineering” so as to promote their site visit. CBRM also promoted the scenario of the project mobilization at landslide area in the Case Study with a team for “the Project for Capacity Development by Training and Preparation of Guidelines, Manuals for Roads”.
- The collaboration was held in the construction activity on A01, 7.6km point that was one of the case study sites. The scheme had been carried out, which participants from university were also expected, on road works regarding emergency recovering works to execute temporary countermeasure works, to decide the methodology of investigation, to design, etc. Actually, since the responsibility for regional staff of DRBFC should not limit only for maintenance works but include road rehabilitation/improvement works and emergency recovery works on the roads, it was the good chance to let them know about the whole of road works schemes to arrange the permanent structure. The collaboration with the other JICA projects was worth for the road works in East Timor to carry out in cooperation with DRBFC, IGE and DRD under MOI and the faculty of engineering in University of East Timor.

#### 【Seminar and Meeting】

- CBRM promoted the seminars and meetings to make public relations of project activities to relevant offices of CBRM and to share all technical information to the staff of DRBFC and other relevant staff of CBRM. Seminars and meetings held in 3<sup>rd</sup> Field Work are explained in other section hereinafter.

### 3.5.3 Capacity building to IGE

#### (1) Capacity building on equipment management

Technical support on the equipment management in 3<sup>rd</sup> Field Work was put emphasis on improvement of its operation including familiarization of database as a follow-up of 2<sup>nd</sup> Field Work, in order to enable IGE to operate equipment management system independently and efficiently, and to make it firmly established in IGE as it would be the own system.

In order to cope with the unforeseen problems such as unauthorized change of the license (number) plate, five (5) figures machines' identity code was newly introduced into IGE's equipment management. All construction equipments, attachments and vehicles under control of IGE were painted with their identity code on their body, and related database was

reprogrammed and updated accordingly.

With regard to the IGE staff training, CBRM held meetings in order to promote a better understanding on IGE staff and C/P of the structure and function of the IGE's equipment management system, and to boost the IGE's equipment management operation. In addition to this, an intensive training on how to use and manage database was conducted for selected seven (7) IGE staff for four (4) months.

(2) **Mechanic training**

Mechanic training was put emphasis on improve skills and knowledge of IGE mechanics in machine repairing. Along with the follow-up training of 2<sup>nd</sup> Field Work, training had been conducted on typical machine failures of the specific machines that would be expected to occur in near future as machine ages. In 3<sup>rd</sup> Field Work, the number of trainees was nineteen (19). Mechanic training made in 3<sup>rd</sup> Field Work is summarized below:

**【Outline of the mechanic training in 3<sup>rd</sup> Field Work】**

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Theory :	Diesel engine fuel system (details), how to read electric wiring diagram, power train (details), hydraulic system (details)
Practice :	Periodical maintenance, repair, disassembly and assembly (engine, power train, brake system, steering system, hydraulic system)(repeated training), comprehensive training in case study project

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**【Training Course】**

- Mechanic training was carried out for five (5) months from October, 2007 to February, 2008. At the end of training course, completion certificate was awarded to each trainee under the joint signature of the team leader of CBRM and IGE director.

**【Class Work (Theory)】**

- Lecture class was put emphasis along with a follow-up of 2<sup>nd</sup> Field Work on the structure and function of electric/electronic and hydraulic devices, since those were considered as weak area for most trainees and how to check troubles which were typical of each machine.

**【Workshop Practice (OJT)】**

- Practice was given priority to improve skills and knowledge of IGE mechanics in repairing actual machines and how to cope with the machine failures, in spite that those had not occurred yet but would be expected in not too distant future.

(3) **Operator training**

In 3<sup>rd</sup> Field Work, the following training had been carried out for sixteen (16) IGE operators.

- i) Operation training on main four (4) machines to improve average of trainees' operation skills up to "B" level,
- ii) Operation training on Mobile Crane including sling work and hand signals,
- iii) Evaluation of machine operation skills for IGE operators, and

- iv) Advanced training for selected trainees as a prospective instructor for operator training.

Training on the main four (4) machines was aimed at elevating average of trainees’ operation skills up to “B” level. Applied training was carried out by means of OJT at a site preparation work for newly scheduled building lot of IGE compound for one and half (1.5) months.

Operation training on the mobile cranes (lifting capacity of 2.9 ton, and 20 ton) was carried out for selected five (5) trainees for period of one and half (1.5) months at the IGE’s training field. Training included safety work in crane operation, structure and function of crane, sling work, and hand signals, along with crane operation.

Concerning advanced training for a prospective instructor, two (2) IGE operators were selected as assistant to the CBRM expert, and training was carried out by means of OJT. Two (2) trainees were assigned to supervise training such as preparation of machines, provision of fuel, assisting other trainees to carry out daily check, planning training schedule and operating practice training under the instruction of CBRM expert.

Evaluations of skills in machine operation for IGE operators were carried out based on the criteria and guideline set by CBRM expert. Operation tests were carried out at the IGE’s training field in daily check, reading meters/gauges, driving in the test course, operation of work equipment, and execution of construction work. Since almost all IGE operators were not able to write and read, the written examinations were excluded from the evaluation means.

### 3.5.4 Capacity building through the Case Study

#### (1) Preparatory work

CBRM expert assisted and trained the staff of DRBFC and IGE against the preparatory work for the Case Study in 3<sup>rd</sup> Field Work based on the results of the Case Study in 2<sup>nd</sup> Field Work. Assistance activities for the preparatory work in 3<sup>rd</sup> Field Work were carried out with as almost same procedures as the one in 2<sup>nd</sup> Field work. Assistance activities for the staff of DRBFC and IGE before the commencement of actual construction works for the Case Study in 3<sup>rd</sup> Field Work are summarized in below:

#### 【Preparatory Work for the Case Study in 3<sup>rd</sup> Field Work】

Subject	Contents
1. Principal/objective	<ul style="list-style-type: none"> <li>- Self –establishment</li> <li>- Training with review</li> <li>- Trial of collaboration with other JICA project</li> </ul>
2. Selection of site	<ul style="list-style-type: none"> <li>- The site on arterial roads (national roads) to realize the in- house construction by DRBFC and IGE. Consideration with following subjects.               <ul style="list-style-type: none"> <li>- Repair work on the list of DRBFC</li> <li>- Free from the land acquisition</li> <li>- Expectation as demonstration and standardization</li> <li>- Repair work for public benefit</li> <li>- Easy to approach, near the regional office, close to Dili town with the consideration of social security</li> </ul> </li> <li>- Based on reconnaissance survey, the site was selected on A01at 6.6km、 7.6km、 8.9km、 13.9km points.</li> </ul>
3. Work planning for DRBFC	<ul style="list-style-type: none"> <li>- In-house construction project is unavoidable especially in the case of emergency by disaster. Therefore the corporation between DRBFC and IGE is highly expected.</li> </ul>

<p>and IGE</p>	<p>The plan should be shared by the both parties.</p> <ul style="list-style-type: none"> <li>- The plan in 3<sup>rd</sup> Field Work was followed the one in 2<sup>nd</sup> Field Work.</li> <li>- The rental agreement to lease the equipment from IGE was followed the one in 2<sup>nd</sup> Field Work.</li> <li>- The work in the Case Study which should be required for DRBFC and IGE are listed in below.</li> </ul> <p><b>(DRBFC)</b></p> <ul style="list-style-type: none"> <li>a) Reconnaissance survey</li> <li>b) Construction plan (basic design, construction method, construction period, quantity and cost estimation) , control of the cost and documentation</li> <li>c) Equipment list for construction</li> <li>d) Confirmation with IGE about the equipment list</li> <li>e) Coordination, negotiation and agreement with IGE by lease contract</li> <li>f) Detail design and quantity survey</li> <li>g) Construction supervision (assignment of personal for responsible engineer, supervisor, test treatment, schedule, safety activity and etc.)</li> <li>h) Completion report (quantity, progress)</li> </ul> <p><b>(IGE)</b></p> <ul style="list-style-type: none"> <li>a) Condition settlement for lease contract (payment schedule, advance payment, etc.)</li> <li>b) Preparation of equipment based on the list of requirement from DRBFC</li> <li>c) Maintenance of the equipment and record of it</li> <li>d) Arrangement of the mechanics and operators in responsible</li> <li>e) Maintenance work of the equipment during the Case Study.</li> <li>f) Preparation for mobilization of equipment</li> <li>g) Completion report (record of working day and time)</li> <li>h) Preparation of invoice, and request of payment</li> </ul>
<p>4. Site plan, management plan, construction method</p>	<ul style="list-style-type: none"> <li>- Site plan, management plan and construction method shall be established by DRBFC and IGE and executed by themselves. Items to be expected to consider are as follows:</li> </ul> <p><b>(DRBFC)</b></p> <ul style="list-style-type: none"> <li>- Based on the construction method,</li> <li>a) Schedule: based on the item of construction, quantity, number of equipments, should establish the schedule chart and control the activity to follow the schedule.</li> <li>b) Quality: based on the specification for soil, concrete, gravel and stone, should establish the quality control and manage the construction.</li> <li>c) Measurement: should make measurement of works done, and comparison with drawing and control the quantity.</li> <li>d) Cost: should monitor the unit price and control of work amount.</li> <li>e) Manpower: should arrange and control of engineers, supervisors, workers.</li> <li>f) Procurement: should arrange materials( cement, gravel, sand, stone, hot mix, etc.) supplier, and quantity.</li> </ul> <p><b>(IGE)</b></p> <ul style="list-style-type: none"> <li>- Based on the work plan,</li> <li>a) Manpower: should arrange and control of operators and mechanics.</li> <li>b) Maintenance: should execute daily periodic check and repair the equipment.</li> <li>c) Running Record: should prepare the report and record.</li> <li>d) Security for the equipment on the site and mobilization and demobilization</li> </ul>
<p>5. Assignment and scope of work</p>	<ul style="list-style-type: none"> <li>- Assignment and scope of work shall be declared in the Case Study and establish the management system on the site.</li> </ul> <p><b>(DRBFC)</b></p> <ul style="list-style-type: none"> <li>a) Demarcation of central office and regional office, engineer and supervisor.</li> </ul> <p><b>(IGE)</b></p> <ul style="list-style-type: none"> <li>a) Scope of work for IGE main office</li> <li>b) Scope of work for mechanics</li> </ul>

	<ul style="list-style-type: none"> <li>c) Scope of work for operators</li> <li>d) Scope of work for manager</li> </ul>
6. Plan and activity for safety	<ul style="list-style-type: none"> <li>- DRBFC took initiative and responsible with the cooperation of IGE on the site in the safety measure.</li> <li>- Expected safety measure necessary to execute: <ul style="list-style-type: none"> <li>a) To make sure the safety identification during the operation.</li> <li>b) To make sure the safety identification when start the equipment</li> <li>c) Confirmation of safety of the work.</li> <li>d) Machine check after finish the work.</li> </ul> </li> <li>- Establish the management which the assigned safety officer should rule the site activity in the point of prevention of accident.</li> <li>- Consideration for safety equipment operation. <ul style="list-style-type: none"> <li>a) Warning board to show “under construction”</li> <li>b) Hand flag for signing to traffic</li> <li>c) Whistle and helmet</li> </ul> </li> </ul>
7. Mobilization by IGE	<ul style="list-style-type: none"> <li>- Mobilization of equipment shall be responsible by IGE.</li> <li>- Preparation of equipment for mobilization and maintenance.</li> <li>- Mobilization on the required date.</li> <li>- Security measure during the work at the site.</li> <li>- Demobilization shall be responsible by IGE.</li> <li>- Report and record of working day and time and input to the equipment management database.</li> </ul>

Source: Data of CBRM

(2) Execution of construction in the Case study

After the preparatory work, construction works had been started in December 2007 and finished in February 2008. The work was forced to stop from 22<sup>nd</sup> December to 6<sup>th</sup> January because of holidays and bad weather. The construction works were successfully finished under the advice from CBRM expert. CBRM activities on construction of the Case Study in 3<sup>rd</sup> Field Work are summarized as follows:

**【Site management information】**

<b>Item</b>	<b>Description</b>
1) Assignment	<ul style="list-style-type: none"> <li>- Dili regional office acting chief: Joao Pedro Amanal: engineer</li> <li>- Dili District responsible : Alexio de Cruz :supervisor</li> <li>- Site responsible: Mouzinho Tilman :assistant supervisor</li> </ul>
2) Quality control	<ul style="list-style-type: none"> <li>- Following activities were executed. <ul style="list-style-type: none"> <li>a) Proof Rolling Test to secure the sub-grade and sub-base coarse</li> <li>b) Laboratory Test for sub-base and base coarse materials</li> <li>c) Site check for the stone material, and water control for sub-base coarse construction.</li> <li>d) Water control, cement content for concrete production.</li> </ul> </li> </ul>
3) Progress control	<ul style="list-style-type: none"> <li>- Not worked caused by rainy season</li> <li>- Weekly check of arrangement of equipment</li> </ul>
4) Quantity survey	<ul style="list-style-type: none"> <li>- Confirmation of quantity with the plan approved by DRBFC</li> <li>- Measurement of quantity by the area</li> </ul>
5) Cost control	<ul style="list-style-type: none"> <li>- Summarized and reported in Completion Report</li> </ul>
6) Worker control	<ul style="list-style-type: none"> <li>- Community contract didn't work as supply contract. Labors and technicians were supplied from the village near the site.</li> <li>- Operators were supplied from IGE.</li> </ul>

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| 7) Material | <ul style="list-style-type: none"><li>- Sub-base material was supplied from river bed.</li><li>- Cement and other materials were arranged by DRBFC.</li><li>- Hot mix, stone masonry, base coarse was contracted by private contractor.</li></ul> |
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Source: Data of CBRM

#### **【Execution procedure】**

- Kick off meeting was held on September 26, 2007 for the Case Study in 3<sup>rd</sup> Field Work. Document submission for approval to Treasury in Ministry of Finance (MOF) was on October 23, 2007 after the completion and approval of the plan of the Case Study with its budget of DRBFC, MOI. Preparation of document was required one month in DRBFC. The document was approved and returned from Treasury in MOF on November 7, 2007 and it was required 2 weeks. Then, DRBFC sent the document to Secretary of State (SE) for Public Works for approval. The document traveled from SE of Public Works to Treasury again to request the checkbook for execution of the works. Receiving the checkbook from MOF was November 27, 2007. After two month from the kick off meeting, Dili regional office received the checkbook to execute the works.
- IGE has been troubled by the returning of equipment for the establishment of management system, which system is central control of all equipment to keep proper maintenance for the equipment. IGE announced their request to return the equipment by the letter of November 7, 2007. Central office of DRBFC showed their positive attitude to cooperate this requirement based on their policy. However, there was not welcome to the regional office to return the equipment in the rainy season. They thought that the sort of equipment should be kept in regional offices for emergency case by disaster. Dili regional office finally returned the equipment to IGE on December 4, 2007, having some coordination meetings between DRBFC and IGE. It took almost one month of time to return the equipment from DRBFC to IGE.
- Through the topics mentioned above, it was December 5, 2007 that the construction was started from drainage cleaning. The work for drainage cleaning was contracted by the people who live along the road. Then asphalt surface was treated by the cutter hired from private sector. It was December 13, 2007 that the equipment from IGE entered the site and started the excavation work.

#### **【Report】**

- As for the Case Study in 3<sup>rd</sup> Field Work, CBRM expected that DRBFC and IGE would execute the construction activity by themselves following the scheme of the Case Study in 2<sup>nd</sup> Field Work like “Lease Agreement” and “Invoice for Payment”. Therefore, CBRM intentionally did not have active actions and observed how the DRBFC and the IGE staff move. CBRM supported C/P agencies when required and when necessary.
- Not only a management, construction techniques for quality assure were also reminded in the activity in 3<sup>rd</sup> Field Work as shown below:
  - a) River bed material to use for sub base course; the quality of sub-base construction works would be tested by proof rolling test at site.

- b) Proof rolling test; since the test would be afraid to execute with not enough weight, it was recommend to fix the truck for the test.
  - c) Base coarse material; since they were supplied by private sector, it was recommended to send them for laboratory test for approval.
  - d) Hot mix material supplied by private sector; it would be recommended to send to laboratory test for approval.
  - e) Keeping the design thickness of base and sub-base courses of road.
  - f) Demonstration the water cement ratio by the bucket in any construction.
  - g) Construction of lean concrete base and filter for gabion works were strongly recommended.
  - h) Asphalt cut was strongly required by vertical angle.
- CBRM tried to collaborate with other JICA projects through the Case Study in 3<sup>rd</sup> Field Work. CBRM announced the information of site progress to JICA project of “The Project for Capacity Development of Teaching Staff in the Faculty of Engineering” to promote their site visit. CBRM also promoted the scenario of the project mobilization at landslide area in the Case Study with a team for “The Project for Capacity Development by Training and Preparation of Guidelines and Manuals for Roads”.
  - The collaboration was held in the construction activity on A01, 7.6km point at the case study site. The scheme was carried out, which participants from university were also expected, on road works regarding emergency recovering works, to decide the methodology of investigation, to design, etc. Actually, since the responsibility for regional staff of DRBFC should not limit only for maintenance works but include road rehabilitation/improvement works and emergency recovery works on roads, it was the good chance to let them know about the whole of road works schemes to arrange the permanent structure. The collaboration with the other JICA projects was worth for the road works in East Timor to carry out in cooperation with DRBFC, IGE and DRD under MOI and the faculty of engineering in University of East Timor. The schemes for collaboration shows as below:
    - a) The damage of the road shall be temporary rehabilitated as soon as possible for traffic safety.
    - b) In order to finalize the permanent treatment for the damaged area, should consider some checking methods whether land sliding is progressing or not.
    - c) Based on the check methods, should decide the item and size of investigation following up the prospected causes of sliding.
    - d) Execution of investigation /check work.
    - e) Based on the result of investigation, should start to design the recovering works for land sliding site.
    - f) Based on the design, permanent treatment at the sliding place should start.

- CBRM took responsible for item a) and b) in above, and handed over the subject to a team for “The Project for Capacity Development by Training and Preparation of Guidelines and Manuals for Roads” for items c), d), e) in above so as to contribute to reference of preparation of their guideline for slope protection .

**【Seminar】**

- The seminar as to the Case Study in 3<sup>rd</sup> Field Work was held in February 2008 with following subjects. The seminar was aimed to spread out of the activity of CBRM in the Case Study to all regional staffs.
  - a) Confirmation of cash flow management,
  - b) Confirmation of documents flow management,
  - c) Confirmation of the knowledge which was transferred in the Case Study,
  - d) How to realize the appropriate construction, and
  - e) The work scheme to be involved by design section of DRBFC and laboratory, DRD of MOI.

**3.5.5 Meetings, seminars/workshop and website**

(1) Meetings

Several kinds of meeting had been held in 3<sup>rd</sup> Field Work so as to make smooth operation and share the information of CBRM activities in C/P agencies and relevant offices in East Timor. Contents of regular meeting hold in 3<sup>rd</sup> Field Work are summarized as below [Table 3.8](#).

**Table 3.8 Regular Meeting (3<sup>rd</sup> Field Work of CBRM)**

<b>Regular Meeting</b>	<b>Contents of the Meeting</b>
Regular Meeting in DRBFC	- Special regular meetings between DRBFC and CBRM experts had no been held in 3 <sup>rd</sup> Field Work, since meetings of DRBFC had been frequently held with director, section chief, and staff of DRBFC as necessary time so as to make the activities smooth.
Regular Meeting in IGE	- As for the capacity building to IGE, meetings between Director of IGE and the Project experts had been always held at Taci Tolu camp regarding the activities for management systems, mechanic’s training and operator’s training.
Regular Meeting with JICA T/L Office	- Monthly regular meetings had been held at JICA East Timor (T/L) office with agenda of progress of the project activities and next month schedule attending officials of JICA office and CBRM experts.
Sharing Information by Letters to C/P Agencies	- Some kinds of important matters were reported by letters between CBRM and the Government of East Timor, especially MOI, DRBFC and IGE so as to share information regarding the Project. Twenty five (25) letters had been submitted in 3 <sup>rd</sup> Field Work as of February 2008.
Joint Meeting between DRBFC and IGE	- Three (3) times of Joint Meeting were held between DRBFC and IGE during preliminary study period for the Case Study. At these meetings, equipment management system IGE was confirmed between DRBFC and IGE.
Regional engineer meetings	- Regional engineer meeting was held on January 14, 2008. Bridge maintenance database was explained and introduced to all regional engineers at this meeting.



Joint Steering Committee Meeting	<ul style="list-style-type: none"> <li>- Fourth (4<sup>th</sup>) Joint Steering Committee meeting was held at December 13, 2007 with attending members of Joint Steering Committees and JICA terminal evaluation mission for the Project. Chairman of the meeting was Secretary of State (SE) of Public Works of MOI. Agenda for the 4<sup>th</sup> joint steering committee meeting was the explanation for evaluation results of JICA mission. All members confirmed at the evaluation result and signed R/D between JICA mission and SE of Public Works.</li> <li>- Fifth (5<sup>th</sup>) Joint Steering Committee meeting was held on Mach 05, 2008, before completing 3<sup>rd</sup> Field Work, regarding the draft final report and final achievement results by the Project. Chairman was SE of Public Works of MOI, Project Director of CBRM. In this meeting, draft final report for the Project and final achievement results by the Project were approved by JSC members.</li> </ul>
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Sauce : Data of CBRM

(2) Seminars and workshop

Seminars were held two (2) times during 3<sup>rd</sup> Field Work as “Technology Transfer Seminar (5) and (6)” on December 2007 and February 2008, respectively. They were held to upgrade the realization for road maintenance works in C/P agencies and to share the information of the activities in the Case Study and to familiarize the bridge maintenance database and etc.

Workshop was held on December 2007 as a terminal evaluation workshop to make public relations CBRM activities to relevant offices in East Timor during terminal evaluation periods by JICA mission. Outlines of seminars and workshop held in 3<sup>rd</sup> Field Work are summarized in Table 3.9 as below:

**Table 3.9 Outline of Seminars and Workshop (3<sup>rd</sup> Field Work)**

Seminar & Workshop	Date/Time	Place/ Participants	Outline of Seminar
No.5 Technology Transfer(T/T) Seminar	December 18, 2007, 9:00 ~16:00	Meeting Room of MOI and site / Around 10 staff of DRBFC	<ul style="list-style-type: none"> <li>- Lecture for the bridge maintenance database (9:00 – 10:00).</li> <li>- Site training at the bridges near Dili for inspection of bridge condition for the bridge maintenance database (10:00~12:30).</li> <li>- Training to input the data in the database. (14:00-16:00).</li> </ul>
No.6 Technology Transfer Seminar	February 28, 2008,	Meeting Room of MOI / Director of DRBFC, regional engineers and staff of DRBFC, staff of other JICA T/A project, relevant offices of CBRM	<ul style="list-style-type: none"> <li>- Explanation of the Case Study in 3<sup>rd</sup> Field Work, temporary countermeasure for land sliding area and investigation method, etc.</li> <li>- Explanation of Guide Book and Instruction Book for the road maintenance database and bridge maintenance database.</li> <li>- Question and answers</li> </ul>
Terminal Evaluation Workshop	December 13, 2007, 13:30 ~17:00	Conference room of Hotel Timor, Dili, / Representatives of MOI, ADB, UNDP, UNOPS, GTZ, DRBFC, IGE, JICA Mission, JICA East Timor Office and etc.	<ul style="list-style-type: none"> <li>- Opening Speech by Minister of MOI</li> <li>- Outline of the Project for the Capacity Building of Road Maintenance in East Timor (CBRM)</li> <li>- Data base for Road Maintenance of Arterial Roads in East Timor</li> <li>- Case Study carried out in CBRM</li> <li>- Question and answer for the above</li> <li>- Database for equipment management system</li> </ul>

		around 60 persons in total	<ul style="list-style-type: none"> <li>- Training for mechanics and equipment operators of IGE (including the Case Study)</li> <li>- Question and answer for the above</li> <li>- Closing speech by Secretary of State for Public Works, MOI, Project Director of CBRM.</li> </ul>
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Data of CBRM

(3) Website for the Project

During 3<sup>rd</sup> Field Work of CBRM, the web site for CBRM that was established in the official web site of Japan International Cooperation Agency (JICA) with English version and Japanese version in 1<sup>st</sup> Field Work had been updated. The web site had been updated aiming at sharing of data and information such as project activities, etc. with the most recent conditions of the Project.