2 Achievements of the Project

2.1 Outputs and Indicators (Target values and actual values achieved at completion)

2.1.1 Capability of concerned engineers of all ROs/DEOs on road maintenance management is enhanced

2.1.1.1 Knowledge (level of understanding on manuals) and skills of engineers who participated in seminars/OJT's on road maintenance management and bridge inspection are enhanced (60% of those engineers agree that their knowledge and skills on road maintenance management have been enhanced)

Level of knowledge on road slope failure, countermeasures and design was enhanced. While only 18% of the participants answered "have **Much** knowledge" at the preliminary survey, at the post survey 58.68% of the participants answered "gained **Much** knowledge". And, while 31% of the participants answered "have **little** knowledge" at the preliminary survey, at the post survey few participants answered "gained **A little** knowledge".

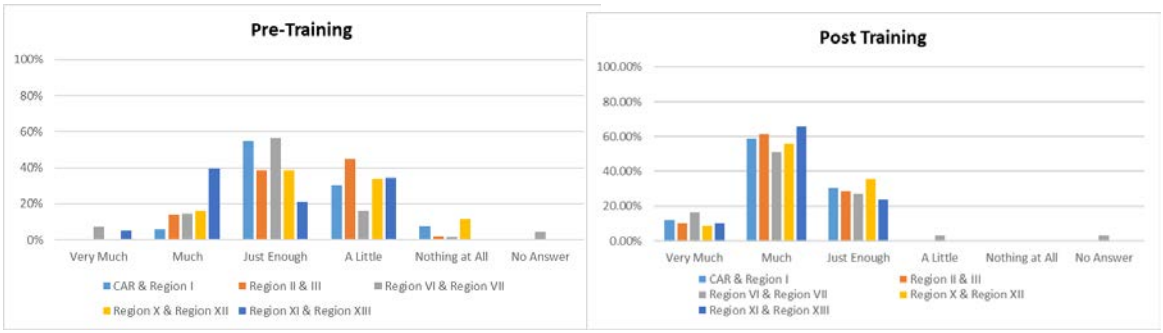


Figure 2.1.1.1-1 Level of Knowledge or Understanding on Road Maintenance

Engineers including young engineers in DPWH gained understanding of the manuals through development of "ROAD SLOPE PROTECTION MANUAL", "POCKETBOOK ON ROUTINE MAINTENANCE" and the field training on road slope or the field trial on road maintenance equipment.

2.1.1.2 17 (seventeen) planned pilot projects on road slope stability are implemented

(1) Description of 17 (seventeen) planned projects

Yearly Budget and selected site and method of each project are shown below.

Table 2.1.1.2-1 Pilot Projects on Road Slope Protection

Approved Budget			Selected site and method		
	Region	PhP Million	Proj. No.	Location	Method
Approved 2016 Budget					
1	V	10.00	1	Ligao-Pio Duran Road	Terramesh
2	VI	10.00	2	Guimbal-Igbaras-Tubungan-Leon Road	Grouted riprap, Stone masonry
3	X	*10.00*		Project Failed	
(Subtotal) (20.00) excluding 1 failed Project					
Approved 2017 Budget					
1	III	*20.00*		Project Failed	

2	V	20.00	3	Albay West Coast Road	Geoweb
3	VI	*20.00*		Project Failed	
4	VIII	10.00	4	Daang Maharlika (Cabuynan, Tanauan)	Rock fence, Rope net
5	X	20.00	5	Sayre Highway (Kulaman Section)	Non-Frame method
6	XII	20.00	6	Davao Cotabato Jct. Digos Road	Geoweb, Geogrid
7	XIII	20.00	7	Daang Maharlika (Surigao-Agusan Section)	Non-Frame method
(Subtotal) (90.00) excluding 2 failed Projects					
Approved 2018 Budget					
1	CAR	70.00	8	Acop-Kapangan-Kibungan Road	Curtain net
2	I	30.00	9	Tagudin-Cervantes Road	Soil nail with mesh
3	II	30.00	10	Penablanca-Kallaw Road	Non-Frame method, Web composite mat
4	III	30.00	11	Pantabangan-Canili-Basal-Baler Road	Non-Frame method, Web composite mat
5	IV-A	30.00	12	Bauan-Mabini Road	Geoweb, Web composite mat
6	IV-B	30.00	13	Paglaum-Bato Road	Geoweb, Web composite mat
7	VI	30.00	14	Guimbal-Igbaras-Tubungan-Leon Road	Non-Frame method, Web composite mat
8	VII	40.00	15	Transcetral Highway, Cebu	Curtain net, Rock fence
9	XI	30.00	16	Fatima-Malabog Road	Geoweb, Web composite mat
10	XIII	30.00	17	Daang Maharlika (Surigao-Agusan Section)	Non-Frame method
(Subtotal) (350.00)					
Total		460.00			

(2) Japanese Method applied

Applied Japanese methods are as follows:

1. Non-Frame Method by Nippon Steel & Sumikin Metal Products Co., Ltd. (NSMP),
2. Rock fence, Rope net, Curtain net by Tokyo Rope MFG. Co., Ltd.,
3. Web composite mat by Takino Filter Inc.,
4. Geoweb, Geogrid by Asahi Kasei Advance Corporation

(3) Results of Pre- and Post-Evaluation on Field Training

Knowledge (level of understanding on manuals) and skills of engineers who participated in seminars/OJT's on Road Maintenance or Road Slope Protection are enhanced (60% of those engineers agree that their knowledge and skills on Road Maintenance or Road Slope Protection has been enhanced)

Results of Pre- and Post-evaluation of 1st to 12th Road Slope Protection Field Training (each training consists of 3 days)

i) Do you think that you have **enough basic knowledge** to implement/supervise the road slope maintenance including quality control?

The Pre-Training Survey revealed the knowledge of the participants was lower.

At the end of the training, the Post-Training Survey was conducted which aimed to improve the conduct of training in general and we arrived at the result of this number.

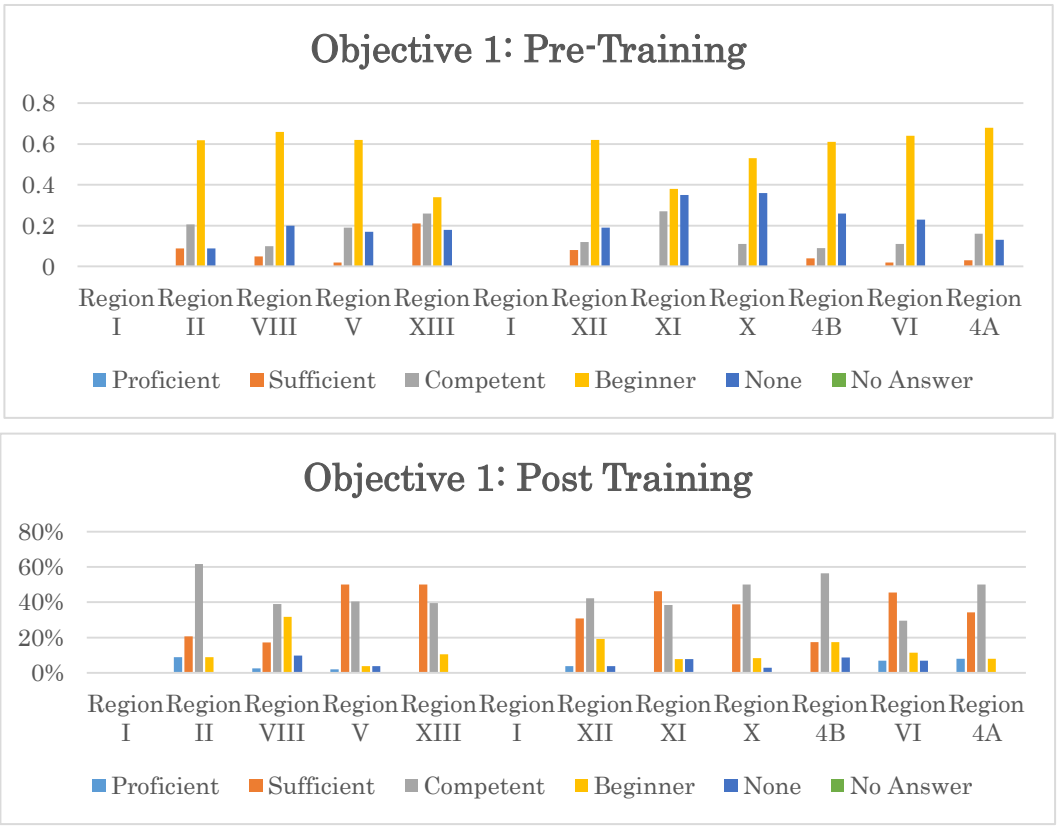


Figure 2.1.1.2-1 Level of Knowledge or Understanding.

The lectures/field works in the training were evaluated and the results revealed that most participants gained “Sufficient” and “Competent” knowledge or understanding on the given topics.

Therefore, knowledge or understanding of participants has been enhanced, and the target "60% of those engineers agree that their knowledge and skills on Road maintenance or Road Slope Protection has been achieved" has been reached.

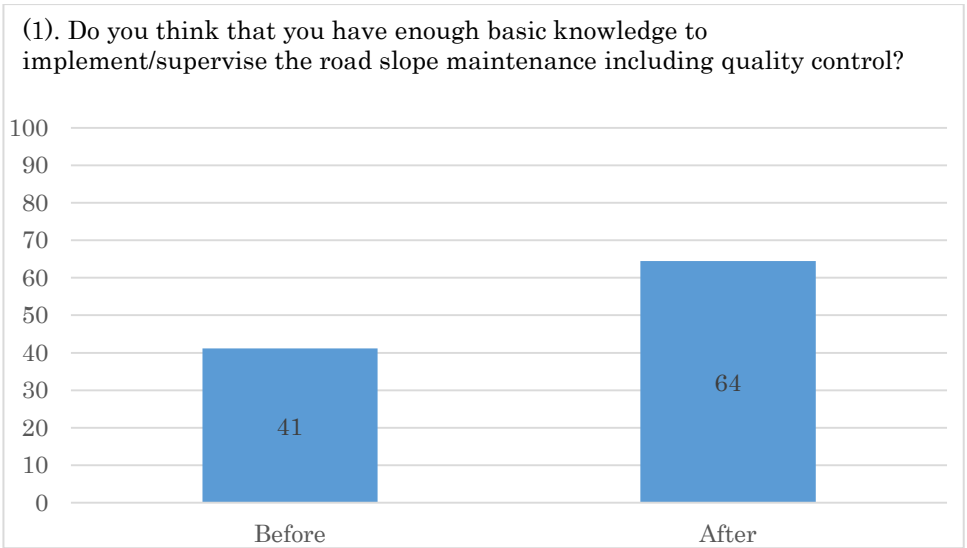


Figure 2.1.1.2-2 Participants and Skills Acquisition

ii) Do you think that you have **enough experience** to implement/supervise the road slope maintenance including quality control?

The Pre-Training Survey revealed the experience of the participants was lower.

At the end of the training, the Post-Training Survey was conducted which aimed to improve the conduct of training in general and we arrived at the result of this number.

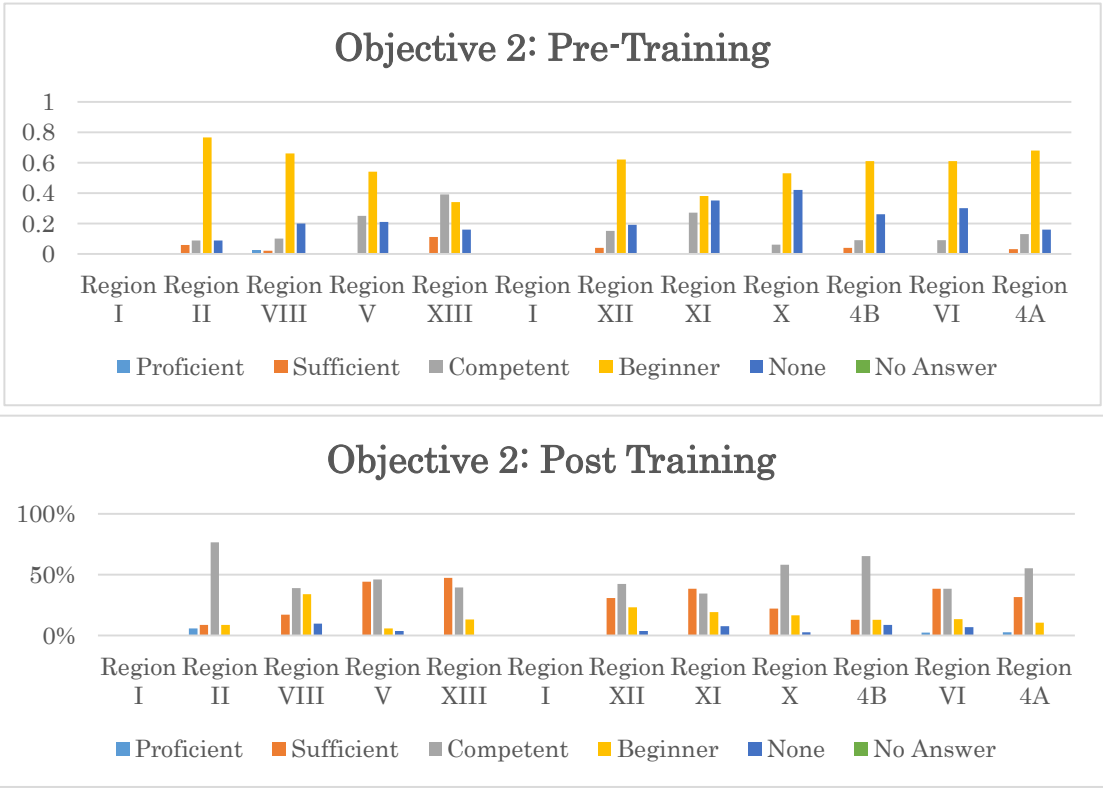


Figure 2.1.1.2-3 Level of Experience (Acquisition of Knowledge or Understanding)

The lectures/field works in the training were evaluated and the results revealed that most participants gained “Sufficient” and “Competent” knowledge or understanding on the given topics.

Therefore, knowledge or understanding of participants has been enhanced through the experiences of the Road Slope Protection Field Trainings, and the target "60% of those engineers agree that their knowledge and skills on Road maintenance or Road Slope Protection has been achieved" has been reached.

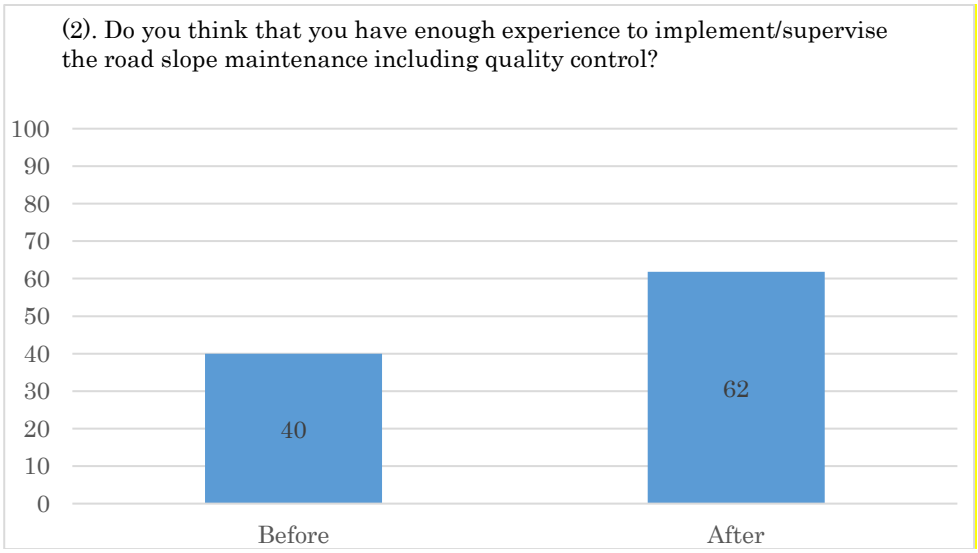


Figure 2.1.1.2-4 Participants and Skills Acquisition

2.1.2 Capability of concerned engineers of all ROs/DEOs on bridge maintenance management is enhanced

2.1.2.1 Knowledge (level of understanding on manuals) and skill of engineers who participated in seminars/OJT's on bridge maintenance management and bridge inspection are enhanced (60% of those engineers agree that their knowledge and skills on bridge maintenance management and bridge inspection has been enhanced)

a. Sustainability Seminar

Sustainability Program Seminars were conducted 9 times by DPWH C/P from April 2015 to July 2016 as follows; JICA Expert attended 2 RO Seminars and provided technical advisory.

Table 2.1.2.1-1 The Seminars on Sustainability Program

RO	Team 1	Team 2	Venue	Accomplishment Report
XI &XIII	Apr 13-17, 2015 Apr 20-24, 2015		I	○
VII & VI		May 18 - 22, 2015 June 1 - 5, 2015	VII	○
CAR & I	Jul 20 - 24,2015 Jul 27 - 31,2015		CAR	○
X & XII		Sep 14 - 18, 2015 Sep 21 - 25, 2015	X	○
IV-A & C.O	Nov 30 - Dec 4, 2015 Nov 23 - 27, 2015		IV-A	
V-B & NCR		Jan 18 - 22, 2016 Feb 1- 5, 2016	IV-B	○
V & VIII	Feb 29 - Mar 4, 2016 Mar 7 - 11, 2016		V	
II & III		May 16 - 20, 2016 May 23 - 27, 2016	II	
IX	Jul 18 - 22, 2016 Jul 25 - 29, 2016		IX	○

JICA expert attended in the seminar held at yellow-colored RO (V & VIII, II & III)

After Sustainability program seminar, Sustainability team submitted Accomplishment Report as follows:

JICA Expert received 6 Accomplishment Report from C/P as of August 2017.

JICA expert reviewed and evaluated the Accomplishment Report and followed up the seminar to enhance the DPWH engineers.

In the Sustainability seminar, DPWH collected pre- and post-evaluation sheets from participants to evaluate the level of knowledge or understanding on the topics. JICA expert analyzed and evaluated the results of pre- and post-evaluation sheets as follows:

(1) Road and Bridge Maintenance Practices in DPWH

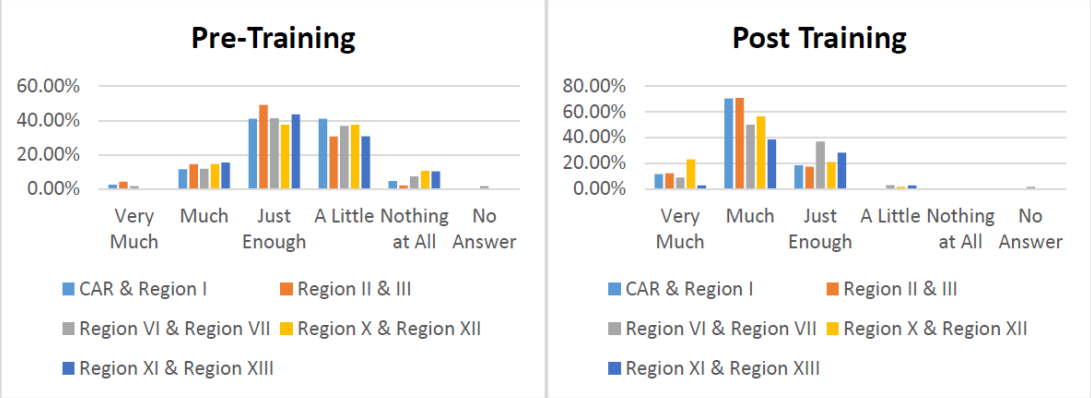


Figure 2.1.2.1-1 Level of Knowledge or Understanding on Road and Bridge Maintenance Practice

The Pre-Training Survey conducted revealed that the higher rating was evaluated by the participants:

CAR & Region I **"Just Enough" & "A Little"**- 40.91%
Region I & III "**Just Enough"** – 48.98%
Region VI & VII **"Just Enough"** – 41.18%
Region X & XII **"Just Enough" & "A Little"**- 37.50%
Region XI & XIII "**Just Enough"** – 43.59%

At the end of the training, the Post-Training Survey was conducted which aimed to improve the conduct of training in general and we arrived at the result of this number.

Table 2.1.2.1-2 Result of Post Training Survey on Road and Bridge Maintenance Practice

REGION	MUCH	JUST ENOUGH
CAR & Region I	70.45%	18.18%
Region I & III	70.73%	17.07%
Region VI & VII	50%	36.76%
Region X & XII	56.25%	20.83%
REGION XI & XIII	38.46%	28.21%
AVERAGE %	**57.18%**	**24.21%**

The lectures/field works in the five-day training were evaluated and the results revealed that 57.18% of the participants gained **"Much"** knowledge while 24.21% gained **"Just enough"** knowledge or understanding on the topics given.

(2) Bridge Management System

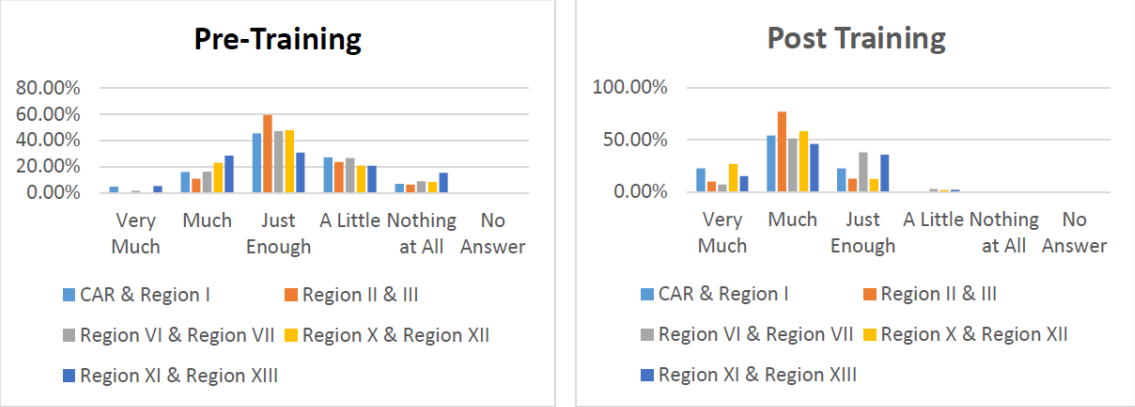


Figure 2.1.2.1-2 Level of Knowledge or Understanding on Bridge Management System

The Pre-Training Survey conducted revealed that the higher rating was evaluated as "Just Enough" by the participants:

CAR & Region I – 45.45%
Region II & III – 59.57%
Region VI & VII– 47.06%
Region X & XII – 47.92%
Region XI & XIII – 30.77%

At the end of the training, the Post-Training Survey was conducted which aimed to improve the conduct of training in general and we arrived at the result of this number.

Table 2.1.2.1-3 Result of Post Training Survey on Bridge Management System

REGION	MUCH	JUST ENOUGH
CAR & Region I	54.55%	22.73%
Region II & III	76.92%	12.82%
Region VI & VII	51.47%	38.24%
Region X & XII	58.33%	12.50%
REGION XI & XIII	46.15%	35.90%
AVERAGE %	**57.48%**	**24.44%**

The lectures/field works in the five-day training were evaluated and the results revealed that 57.48% of the participants gained **"Much"** knowledge while 24.44% gained **"Just enough"** knowledge or understanding on the topics given.

(3) Type of Bridge Defects and Causes

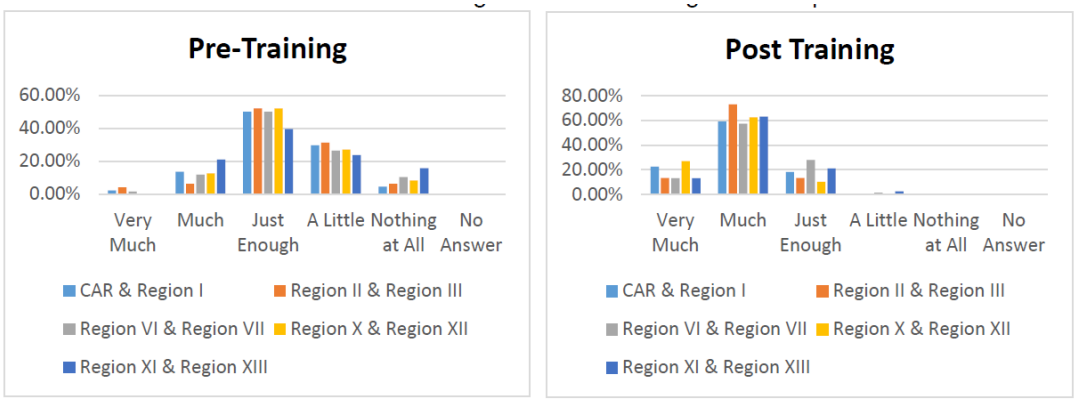


Figure 2.1.2.1-3 Level of Knowledge or Understanding on Type of Bridge Defects and Causes

The Pre Training Survey conducted revealed that the higher rating evaluated as "**Just Enough"** by the participants:

CAR & Region I– 50%
Region II & III – 52.08%
Region VI & VII – 50%
Region X & XII – 52.08%
Region XI & XIII – 39.47%

At the end of the training, the Post-Training Survey was conducted which aimed to improve the conduct of training in general and we arrived at the result of this number.

Table 2.1.2.1-4 Result of Post Training Survey on Type of Bridge Defects and Causes

REGION	MUCH	JUST ENOUGH
CAR & Region I	59.09%	18.18%
Region II & III	72.97%	13.51%
Region VI & VII	57.35%	27.94%
Region X & XII	62.50%	10.42%
REGION XI & XIII	63.16%	21.05%
AVERAGE %	**63.01%**	**18.22%**

The lectures/field works in the five-day training were evaluated and the results revealed that 63.01% of the participants gained **"Much"** knowledge while 18.22% gained **"Just enough"** knowledge or understanding on the topics given.

(4) Bridge Repair Methods

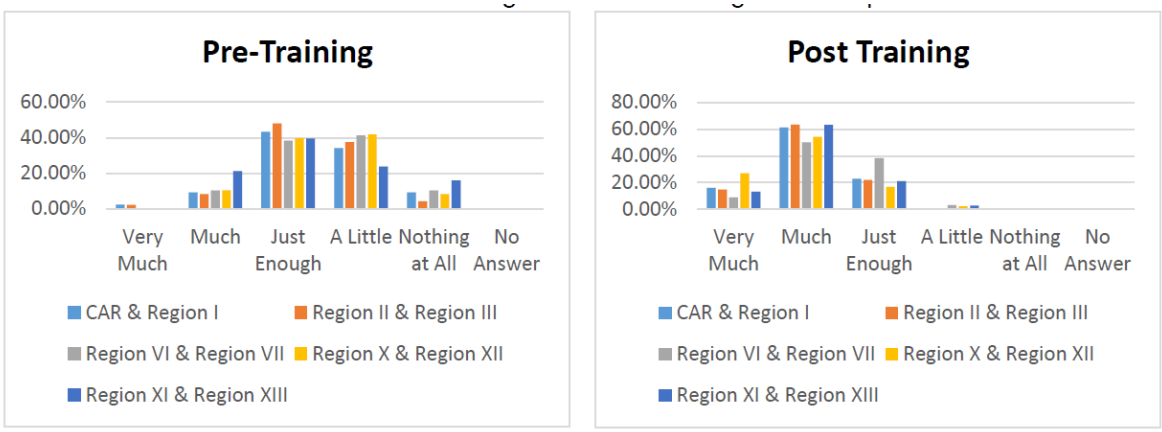


Figure 2.1.2.1-4 Level of Knowledge or Understanding on Bridge Repair Method

The Pre-Training Survey conducted revealed that the higher rating was evaluated by the participants:

CAR & Region I **"Just Enough"** – 43.18%
Region II & Region III **"Just Enough"** – 47.92%
Region VI & VII **"A Little"** – 41.18%
Region X & XII **"A Little"** – 41.67%
Region XI & XIII "**Just Enough"** – 39.47%

At the end of the training, the Post-Training Survey was conducted which aimed to improve the conduct of training in general and we arrived at the result of this number.

Table 2.1.2.1-5 Result of Post Training Survey on Bridge Repair Method

REGION	MUCH	JUST ENOUGH
CAR & Region I	61.36%	22.73%
Region II & Region III	63.41%	21.95%
Region VI & VII	50.00%	38.24%
Region X & XII	54.17%	16.67%
REGION XI & XIII	63.16%	21.05%
AVERAGE %	**58.42%**	**24.13%**

The lectures/field works in the five-day training were evaluated and the results revealed that 58.42% of the participants gained **"Much"** knowledge while 24.13% gained **"Just enough"** knowledge or understanding on the topics given.

(5) Bridge Engineering Inspection

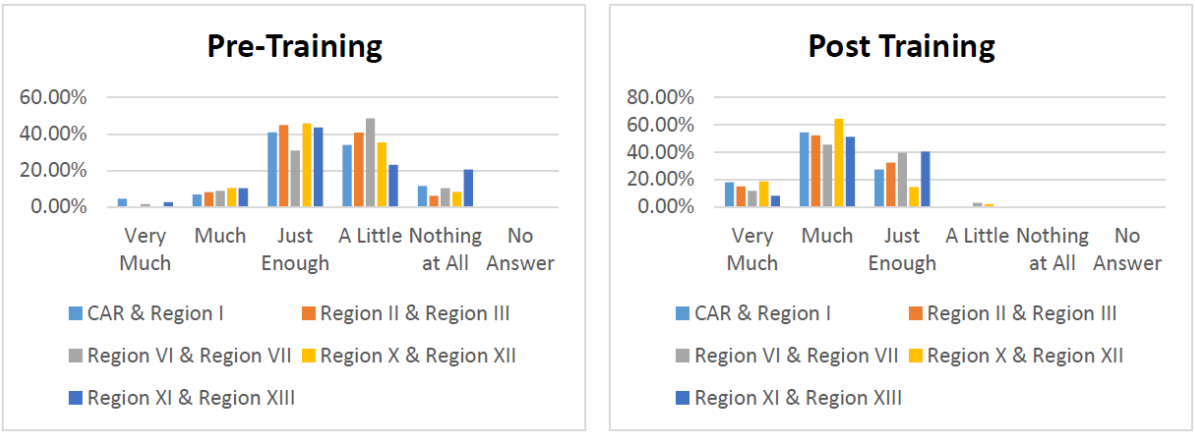


Figure 2.1.2.1-5 Level of Knowledge or Understanding on Bridge Engineering Inspection

The Pre-Training Survey conducted revealed that the higher rating was evaluated by the participants:

CAR & Region I **"Just Enough"** – 40.91%
Region II & III **"Just Enough"** – 44.90%
Region VI & VII **"A Little"** – 48.53%
Region X & XII **"Just Enough"** – 45.83%
Region XI & XIII "**Just Enough"** – 43.59%

At the end of the training, the Post-Training Survey was conducted which aimed to improve the conduct of training in general and we arrived at the result of this number.

Table 2.1.2.1-6 Result of Post Training Survey on Bridge Engineering Inspection

REGION	MUCH	JUST ENOUGH
CAR & Region I	54.55%	27.27%
Region II & Region III	52.50	32.50
Region VI & VII	45.59%	39.71%
Region X & XII	64.58%	14.58%
REGION XI & XIII	51.35%	40.53%
AVERAGE %	**53.71%**	**30.92%**

The lectures/field works in the five-day training were evaluated and the results revealed that 53.71% of the participants gained **"Much"** knowledge while 30.92% gained **"Just enough"** knowledge or understanding on the topics given.

Based on the above evaluation, in all activities of sustainability seminar 60 % of engineers agree that their knowledge and skills on bridge maintenance management have been enhanced.

b. 10-Days Field Training on Bridge Engineering Inspection

The Pre-Training Survey revealed the knowledge of the participants was lower.

At the end of the training, the Post-Training Survey was conducted which aimed to improve the conduct of training in general and we arrived at the result of this number.

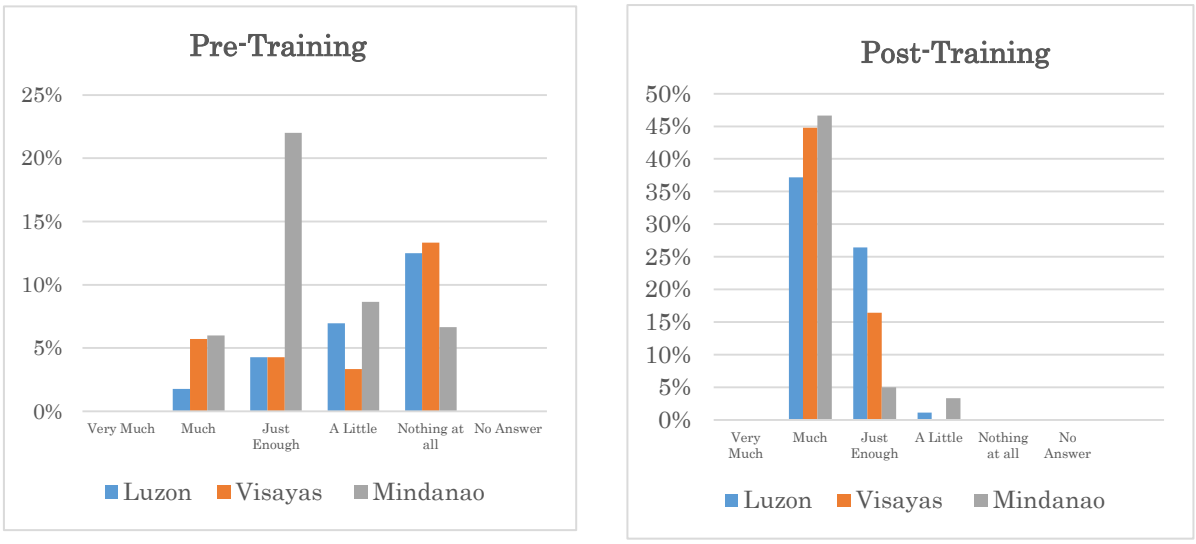


Figure 2.1.2.1-6 Level of Knowledge or Understanding.

The lectures/field works in the training were evaluated and the results revealed that most participants gained **"Much"** and **"Just Enough"** knowledge or understanding on the given topics.

Therefore, most participant's level of knowledge or understanding has been enhanced and the target 60% of those engineers agree that their knowledge and skills on bridge maintenance management and bridge inspection has been achieved.

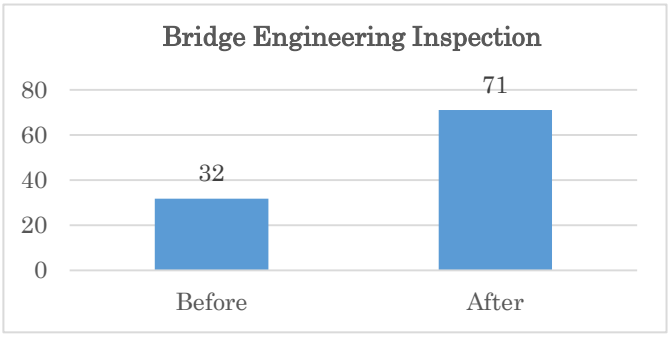


Figure 2.1.2.1-7 Participants and Skills Acquisition (Luzon, Visayas and Mindanao)

c. Load Rating of bridges

The Pre-Training Survey revealed the knowledge of the participants was lower.

At the end of the training, the Post-Training Survey was conducted which aimed to improve the conduct of training in general and we arrived at the result of this number.

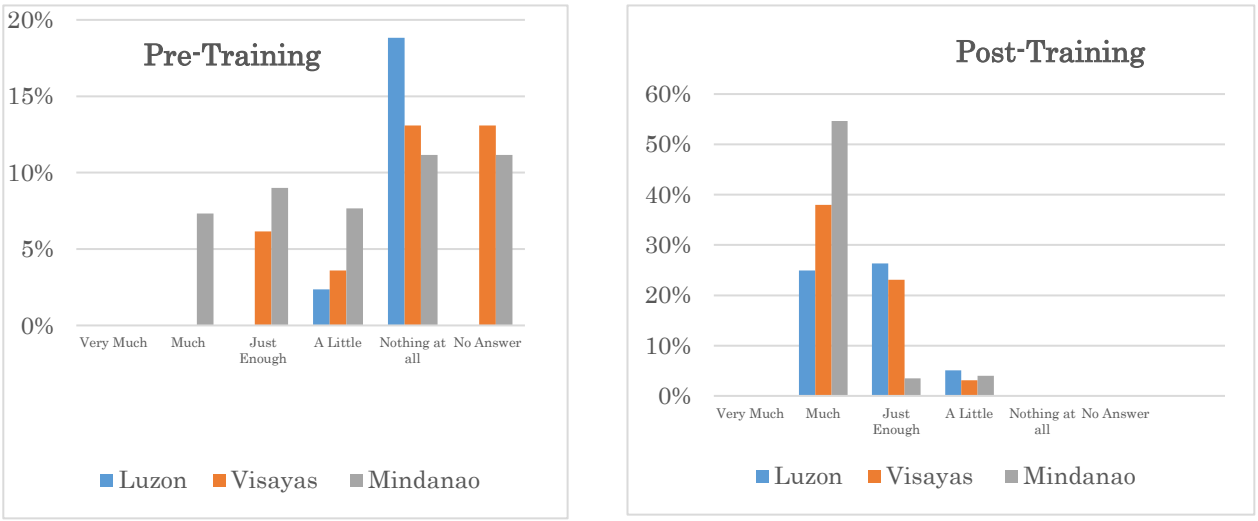


Figure 2.1.2.1-8 Level of Knowledge or Understanding.

The lectures/field works in the training were evaluated and the results revealed that most participants gained **"Much"** and **"Just Enough"** knowledge or understanding on the given topics.

Therefore, knowledge or understanding of participants has been enhanced, and the target "60% of those engineers agree that their knowledge and skills on Road maintenance or Road Slope Protection has been achieved" has been reached.

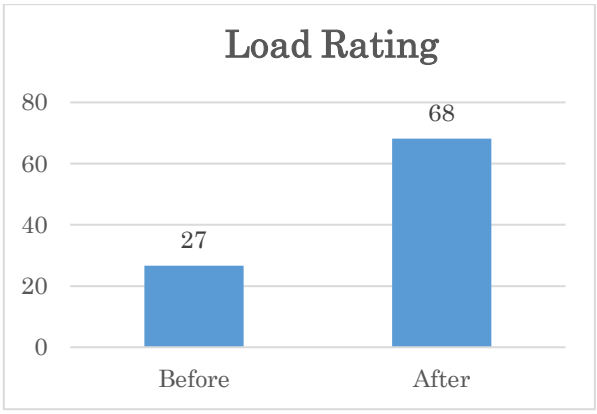


Figure 2.1.2.1-9 Participants and Skills Acquisition (Luzon, Visayas and Mindanao)

2.1.2.2 17 planned pilot projects on bridge repair are implemented

(1) Implementation of pilot project of bridge repair

Objective Regional Offices are RO-I, II, III, IV-A, IV-B, V, VI, VII, VIII, IX, X, XI, XII, XIII, NCR, CAR and NIR, total 17 Regional Offices. Initial target of 17-planned pilot projects on bridge repair are implemented.

The implementation results of the pilot projects on bridge repair of 26 projects (more than 17 projects of the original target) are shown in the table 2.1.2.2-1.

Table 2.1.2.2-1 Implemented Pilot Project on Bridge Repair during Phase III

Pilot Project	Bridge Repair	Object RO
Fiscal year 2016	(2015)	6RO (CAR,I,II,IV-A,IV-B,IX)
	(2016)	2RO (IV-B, V)
Fiscal year 2017	(2017)	9RO (III, NCR, IV-B, V, VI, VIII, X, XII, XIII)
Fiscal year 2018	(2018)	9RO (CAR, I, II, IV-A, VI, VIII, X, XII, XIII)
	Total	26 Pilot Projects > 17 original target

Table 2.1.2.2-2 Implemented Field Training on Bridge Repair during Phase III

Field Training	Bridge Repair	Object RO
Fiscal year 2016	(2015)	3RO (CAR, I, IV-A)
	(2016)	1RO (IV-B),
Fiscal year 2017	(2017)	7RO (III, NCR, V, VI, VIII, IX, XIII)
Fiscal year 2018	(2018)	4RO (II, VI, X, XII)
	Total	15 Field Training (OJT) were implemented

Note) 2 times Field Training in RO VI were implemented because RO NIR was cancelled to establish in Negros Occidental finally.

(2) Result of Pre- and Post-Evaluation on Bridge Repair during Field Training

Pre- and Post-Evaluation were conducted during Field Training on Bridge Repair at all Regions. Target of understanding of participants of DPWH engineers is more than 60%.

According to the table below, all regions (86% average, 62% minimum) are satisfied more than 60%.

On the other hand, technical examination was conducted as the same time.

As the result of this examination, all regions' average (71% average, 64% minimum) are satisfied more than 60%.

a. Objective 1: To understand the types of defects and their causes and procedures in selecting bridge repair method

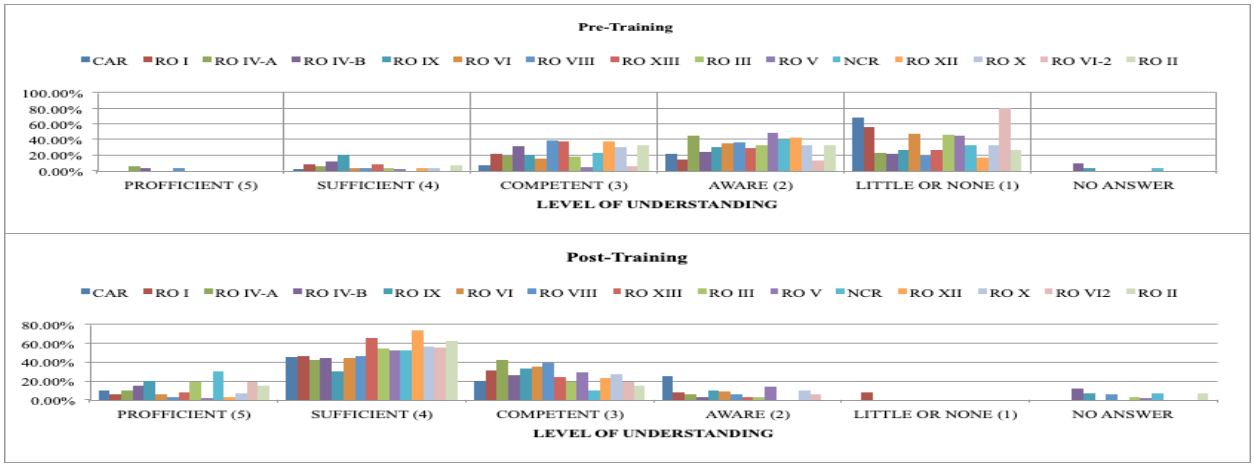


Figure 2.1.2.2-1 Result of Pre- and Post-Evaluation on Objective 1

b. Objective 2: To understand the lecture on repair of concrete deck slab and concrete superstructure

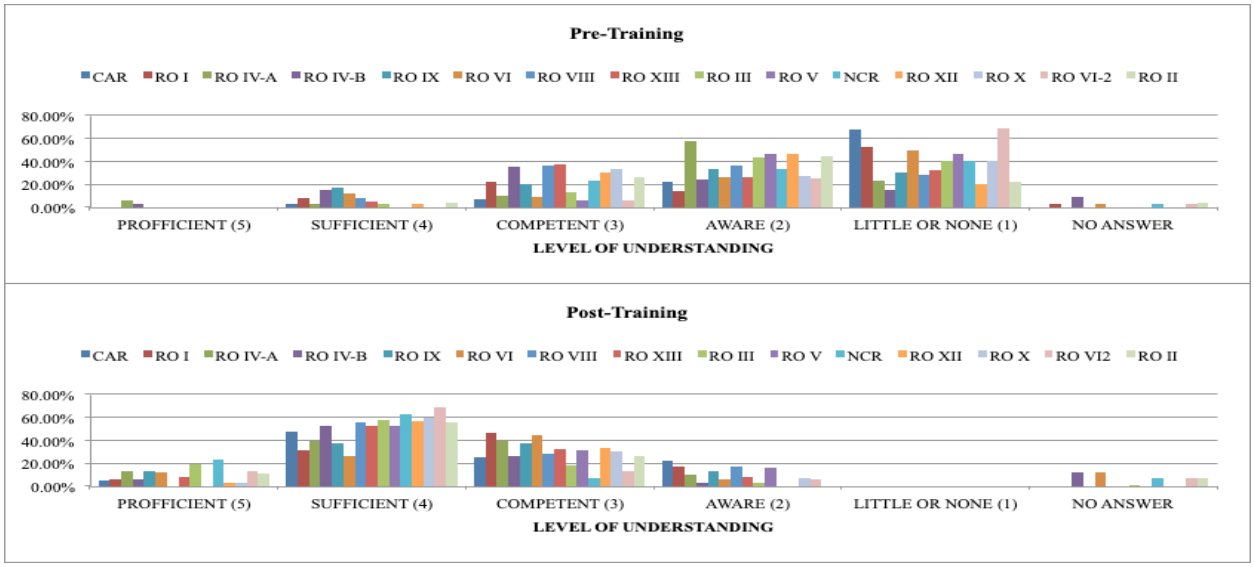


Figure 2.1.2.2-2 Result of Pre- and Post-Evaluation on Objective 2

c. Objective 3: To understand the lecture on repair of steel superstructure and substructure

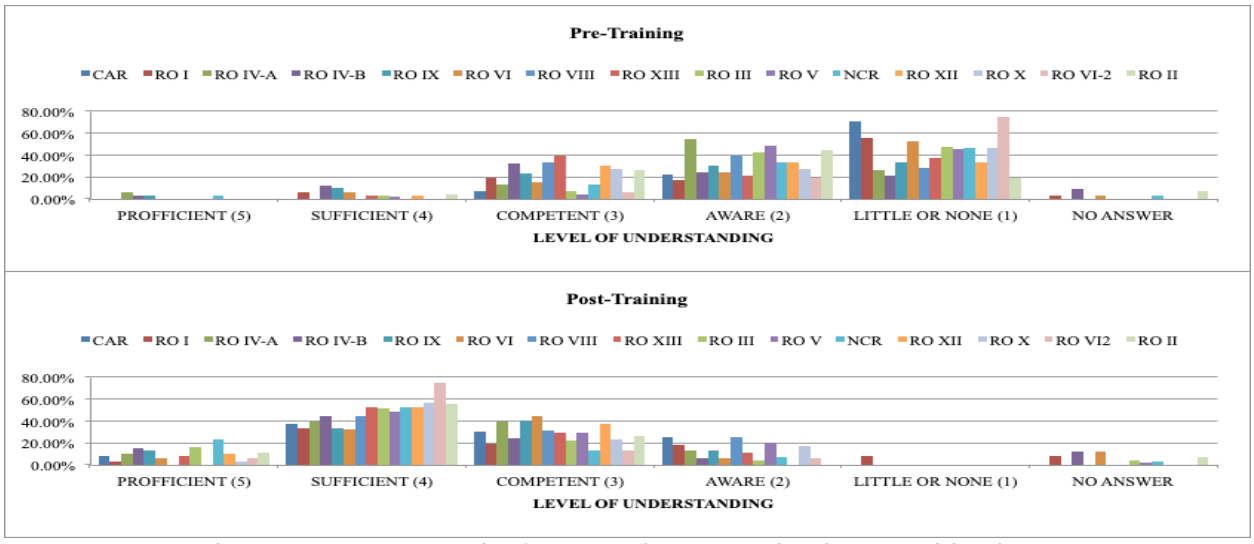


Figure 2.1.2.2-3 Result of Pre- and Post-Evaluation on Objective 3

d. Objective 4: To understand the lecture on repair of expansion joints, bearings and slope protection works

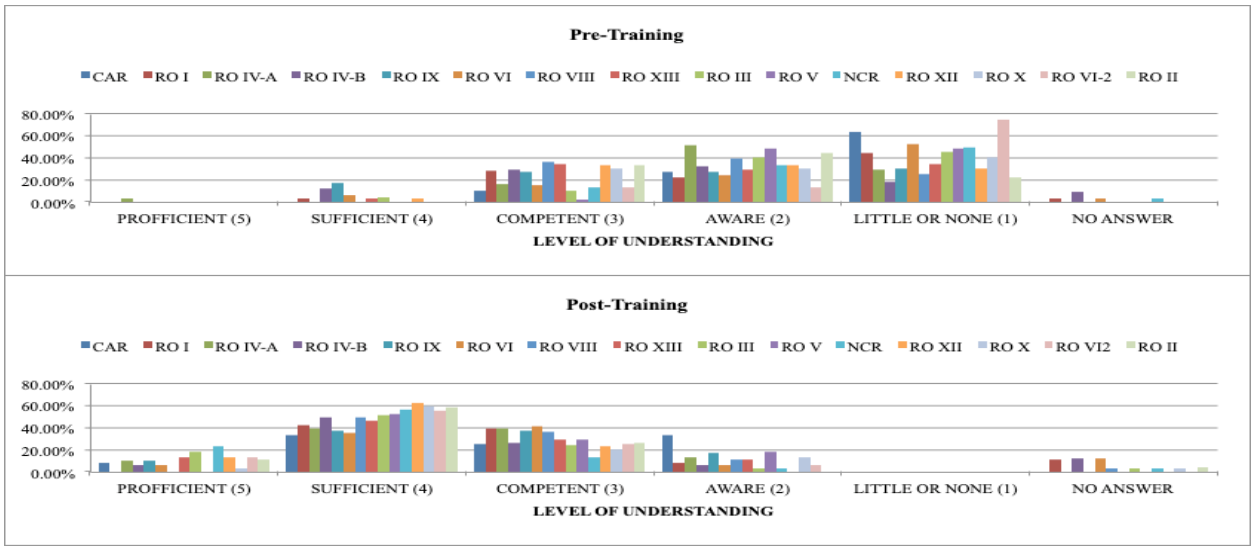


Figure 2.1.2.2-4 Result of Pre- and Post-Evaluation on Objective 4

e. Objective 5: To obtain knowledge and experience through activity of field training on introduction of bridge repair techniques

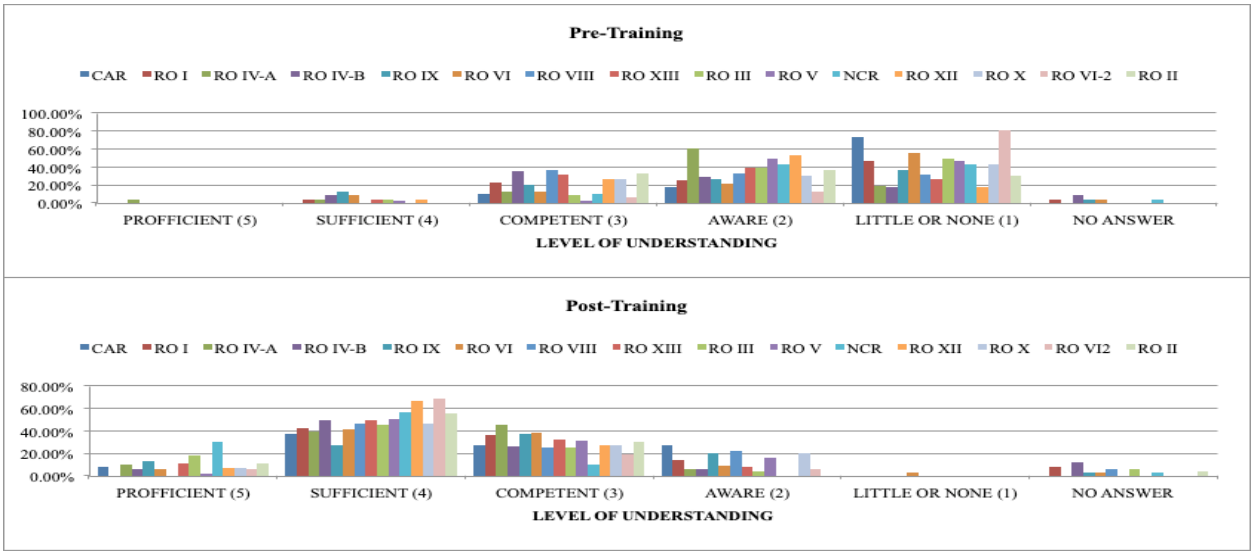


Figure 2.1.2.2-5 Result of Pre- and Post-Evaluation on Objective 5

f. Objective 6a: To obtain knowledge and experience through activity of field training on actual bridge repair using new technology – CFS

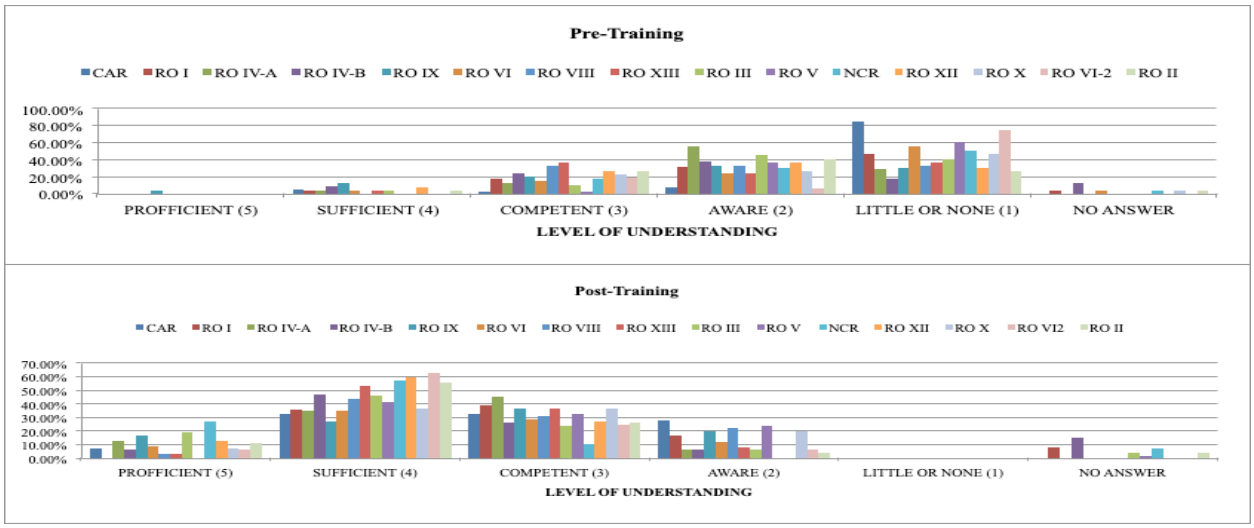


Figure 2.1.2.2-6 Result of Pre- and Post-Evaluation on Objective 6a

g. Objective 6b: To obtain knowledge and experience through activity of field training on actual bridge repair using new technology - Epoxy injection

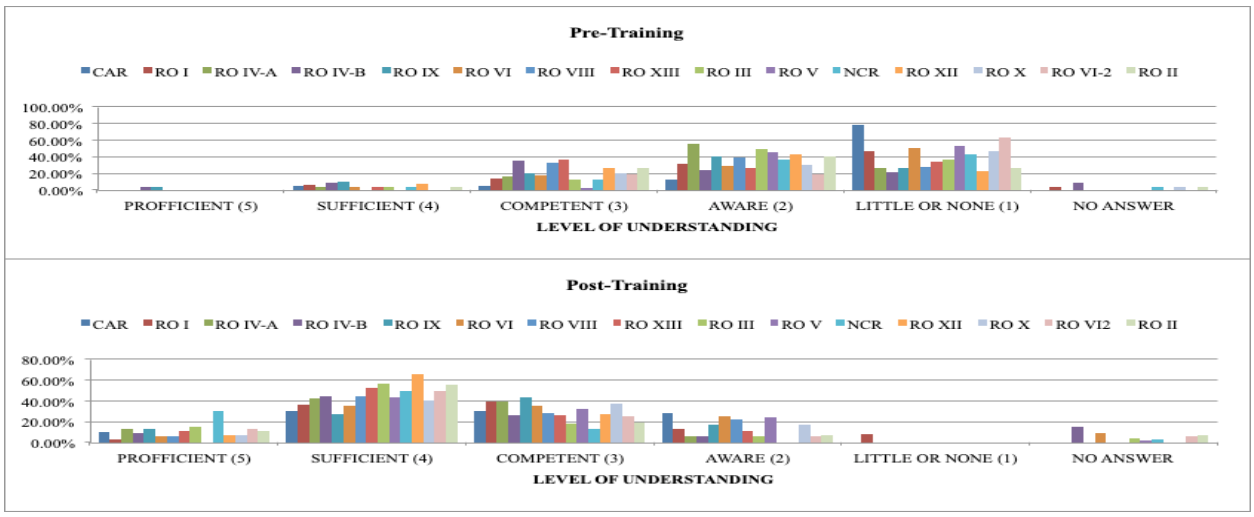


Figure 2.1.2.2-7 Result of Pre- and Post-Evaluation on Objective 6b

h. Objective 6c: To obtain knowledge and experience through activity of field training on actual bridge repair using new technology - Patching Type B

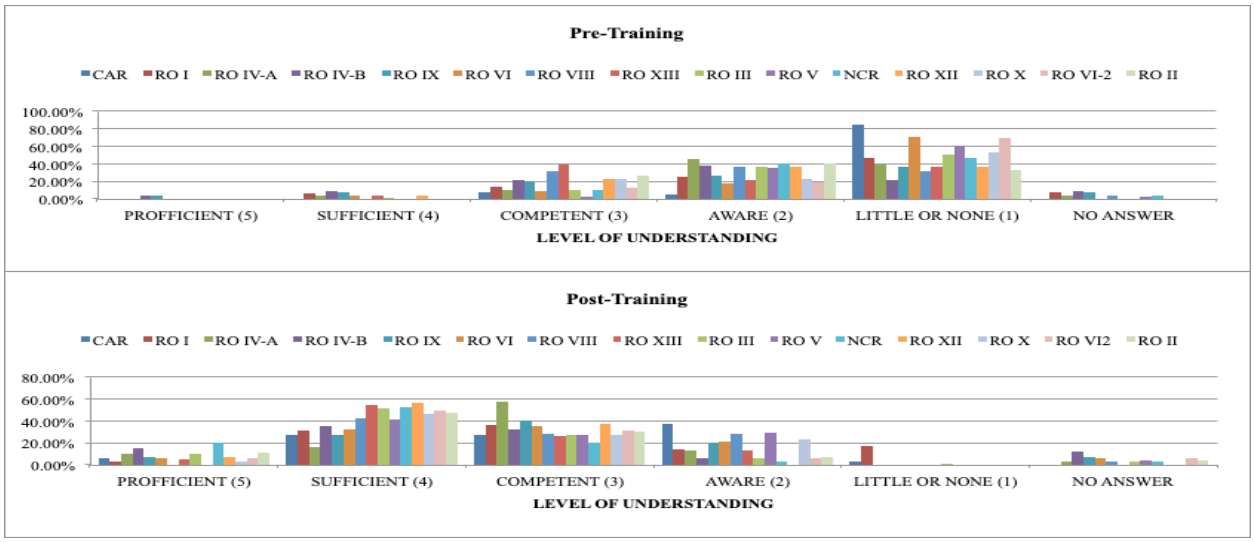


Figure 2.1.2.2-8 Result of Pre- and Post-Evaluation on Objective 6c

i. Objective 7: To understand the lecture and field training on inspection and determination types of bridge repair works

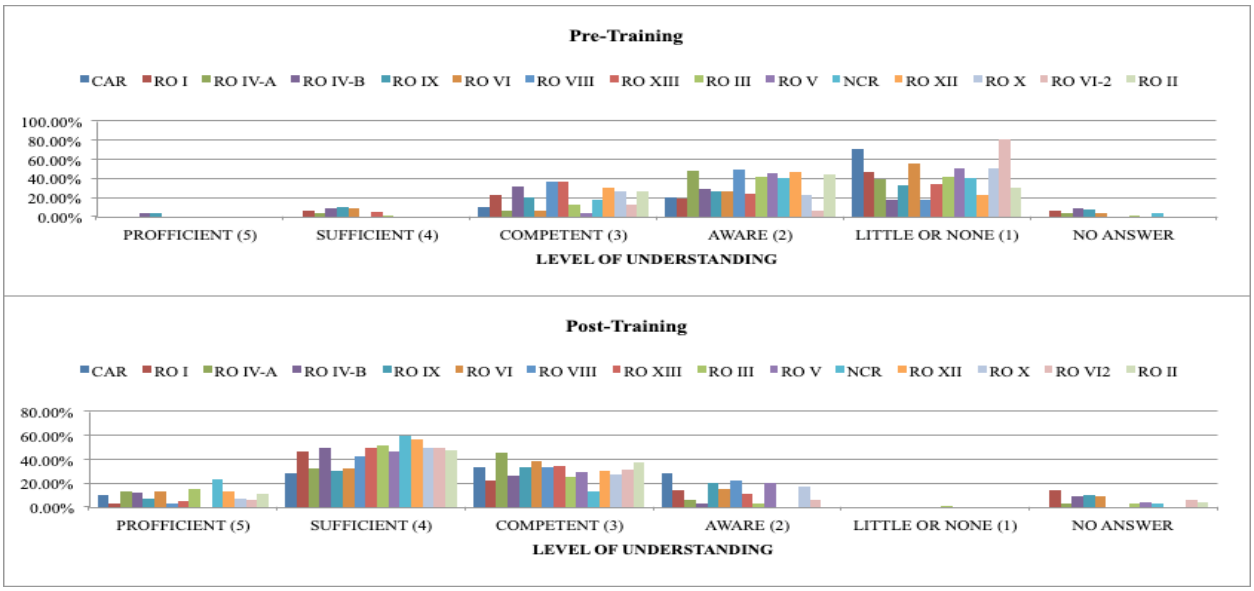


Figure 2.1.2.2-9 Result of Pre- and Post-Evaluation on Objective 7

Table 2.1.2.2-3 Matrix of Training Results Based on Written Exam Score and Understanding of Objectives Field Training on Bridge Repair

Field Training #	Region	Period	Name of Pilot Project Used in Training	No. of Participants	Written Exam Rating (Overall %)	Understanding of Objectives After Training (Sum of Level 3, Level 4 and Level 5)								
						Obj. 1	Obj. 2	Obj. 3	Obj. 4	Obj. 5	Obj. 6a	Obj. 6b	Obj. 6c	Obj. 7
1st	CAR	April 11-13, 2016	Loakan Br. #1, Camp 4 Br. #1, Colorado Br.	41	64	75	78	75	67	73	73	72	62	72
2nd	RO I	April 20 – 22, 2016	Buraan Br.	36	74	84	84	66	81	78	75	78	70	72
3rd	RO IV-A	August 17-19, 2016	Teresa Br.	31	72	94	91	88	88	94	93	94	84	90
4th	RO IV-B	January 11-13, 2017	Kasay Br. And Sabang Br.	34	72	85	85	83	82	82	79	79	82	88
5th	RO IX	March 29-31, 2017	Labangan Br.	30	87	83	87	86	84	77	81	83	74	70
6th	RO VI	August 23 – 25, 2017	Ondoy Br., Putol Br.	34	72	85	82	82	82	85	73	76	73	83
7th	RO VIII	August 30- September 1, 2017	Pagsangaan Br.	36	80	89	84	75	86	72	78	78	70	78
8th	RO XIII	November 7 – 9, 2017	Pulanglupa Br.	38	68	98	93	90	89	93	93	90	86	89
9th	RO III	November 15 – 17, 2017	Bigbiga Br. 2	67	70	93	95	90	94	89	89	90	89	92
10th	RO V	January 10-12, 2018	Agos Br., San Agustin Br.	49	69	84	84	78	82	84	74	74	68	76
11th	NCR	January 24-26, 2018	Arlegui Br. 2, P. Casal Br.	29	65	93	93	89	93	97	94	93	93	96
12th	RO XII	April 25-27, 2018	Dumadalig Br., Luayan Br.	30	76	100	93	100	99	100	100	100	100	100
13th	RO X	December 5-7, 2018	Kulaman Br., Busco Br.	32	66	91	93	83	83	81	81	84	77	84
14th	RO VI	December 12-14, 2018	Patun-an Br.	16	64	94	95	94	94	94	94	88	87	87
15th	RO II	January 9-11, 2019	Barucboc Br.	27	66	93	93	93	96	97	93	86	89	96

Notes:

Objective 1: To understand the types of defects and their causes and procedures in selecting bridge repair method
Objective 2: To understand the lecture on repair of concrete deck slab and concrete superstructure
Objective 3: To understand the lecture on repair of steel superstructure and substructure
Objective 4: To understand the lecture on repair of expansion joints, bearings and slope protection works
Objective 5: To obtain knowledge and experience through activity of field training on introduction of bridge repair techniques
Objective 6a: To obtain knowledge and experience through activity of field training on actual bridge repair using new technology - CFS
Objective 6b: To obtain knowledge and experience through activity of field training on actual bridge repair using new technology - Epoxy injection
Objective 6c: To obtain knowledge and experience through activity of field training on actual bridge repair using new technology - Patching Type B
Objective 7: To understand the lecture and field training on inspection and determination types of bridge repair works

Level 3: Understand and competent in the basic principles and areas
Level 4: Fully competent in the knowledge and skills required
Level 5: Proficient knowledge and skills required
Written Exam Lowest Overall Score: 64%minimum
Level of Understanding of Each Objective after Training: 62%minimum

(3) Enhancement of Technology transfer

After Field Training on Bridge Repair, each regional office conducted additional (22 times) technical training by itself for sustainable enhancement of technology transfer. More than 1091 bridge repair projects were implemented in nationwide during Phase III. More than 630 Engineers can apply bridge repair technology in accordance with Bridge Repair Manual.

Table 2.1.2.2-4 Enhancement of Bridge Repair Technology transfer for each Regional Office in accordance with Bridge Repair Manual

Objective Regional Offices (RO I, II, III, IV-A, IV-B, V, VI, VII, VIII, XI, X, XI, XII, XIII, CAR and NCR)	Numbers of Bridge Repair Projects in accordance with BRM 2014 edition in all regional offices during Phase III				
	2016	2017	2018	2019	Total
	262	415	230	184	1091
	Numbers of seminars/Re-echo Training conducted after Bridge Repair Pilot Project in all region during Phase III				
	2016	2017	2018	2019	Total
	4	6	11	1	22
	Numbers of Engineers who can apply Bridge Repair Technology in accordance with Bridge Repair Manual			630	

Lecturers list was shown as the table below as a reference for the future training. Young CWG members have completed several different lectures as lecturers in TCP III.

No.	Lecture Item	No.1 FT RO CAR April 11-13, 2016	No.2 FT RO I April 20-22, 2016	No.3 FT RO IV-A August 17-19, 2016	No.4 FT RO IV-B January 11-13, 2017	No.5 FT RO IX March 29-31, 2017	No.6 FT RO VI August 23-25,2017	No.7 FT RO VIII Aug.30-Sep.1,2017
1	Types of Bridge Defects, Causes and Repair Methods	Danilo C. Pioquinto	Jay Jenner B. Biares	Alvin C. Cabueñas	Noe Bonga	Patrick Tolentino	Nester John Cagay	Theresa A. Duero
2	Repair of Concrete Superstructure and Substructure	Recy L. Calma	Alvin C. Cabueñas	Alvin C. Cabueñas	Patrick Tolentino	Patrick Tolentino	Vincent Montrix Calapre	Jumar O. Villamor
3	Repair of Steel Superstructure and Substructure	Ruel M. Nazareno	Alvin C. Cabueñas	Danilo C. Pioquinto	Vincent Montrix Calapre	Vincent Montrix Calapre	Jillian Rose D.Atinado	Vincent Montrix Calapre
4	Repair of Expansion Joints, Bearings and Slope Protection	Alvin Cabueñas / Rhett Willem P. Varilla	Alvin C. Cabueñas	Justino Jaime T.Surot & Vincent Montrix Calapre	Mohammad Natino	Mohammad Natino	Jumar O. Villamor	Jillian Rose D.Atinado
5	1st Batch of JICA Training Program in Japan : Results & Impressions	-	-	-	Noe Bonga & Patrick Tolentino	Patrick Tolentino	Patrick Tolentino	Noe Bonga
6	Overview of the target Pilot Project Bridges	MARK ANTHONY T. MENDOZA	Jay Jenner B. Biares	Susan Tabaso	Emiliano R. Rosales	Anselmo J. Obedencia, Jr	Fritz Z. Ruiz	Peter Scheler V. Soco
7	Senior Engineer responsible for Lecture	Alvin Cabueñas	Alvin Cabueñas	Alvin Cabueñas	Alvin Cabueñas	Alvin Cabueñas	Vincent Montrix Calapre	Alvin Cabueñas
8	JICA Expert(Bridge Repair Pilot Project)	Mamoru Izawa	Mamoru Izawa	Mamoru Izawa	Mamoru Izawa	REP' Rodorigo Yago	Mamoru Izawa	Mamoru Izawa

No.	Lecture Item	No.8 FT RO XIII Nov.7-9,2017	No.9 FT RO III Nov. 15-17,2017	No.10 FT RO V Jan. 10-12, 2018	No.11 FT RO NCR Jan. 24-26, 2018	No.12 FT RO XII April 25-27, 2018	No.13FT RO X Dec. 5-7, 2018	No.14 FT RO VI(N.Occ.) Dec. 12-14, 2018	No.15 FT RO II Jan. 9-11, 2019
1	Types of Bridge Defects, Causes and Repair Methods	Mohammad Natino	Patrick Tolentino	Ariel S. Amor	Salvador Marc R. Botin	Alvin Cabueñas	Bryan James Pitos	Jillian Rose Atinado	Bryan Nathaniel Cauilan
2	Repair of Concrete Superstructure and Substructure	Alvin Cabueñas	John Edel Dimarucut	Salvador Marc R. Botin	Ariel S. Amor	Algin T. Gingatan	Renato Ranier Vitorio	Paul Daniel Salas	Dexter Cavaneyro
3	Repair of Steel Superstructure and Substructure	Irewill Flores	Patrick Tolentino	Jumar O. Villamor	Dexter Cavaneyro	Paul Daniel R. Salas	Rene Charles Supremo	Paul Daniel Salas	Bryan Nathaniel Cauilan
4	Repair of Expansion Joints, Bearings and Slope Protection	Bryan James Pitos	John Edel Dimarucut	Salvador Marc R. Botin	John Edel Dimarucut	Irewil Flores	Rene Charles Supremo	Noe Bonga	Dexter Cavaneyro
5	1st Batch of JICA Training Program in Japan : Results & Impressions	2nd batch : Krezia L. Morales	2nd batch : Irewill Flores	by 2nd batch Renato Rainer M. Vitorio	by 2nd batch Ivan Paul D. Vicera	by 2nd batch Irewil Flores	by 3rd batch Bryan James Pitos	by 3rd batch Jillian Rose Atinado	by 3rd batch Mark Andrew L. Delgado
6	Overview of the target Pilot Project Bridges	By Project Engineer	Mary Anne D. Bucad	Salvador Marc R. Botin	By Project Engineer	By Project Engineer	Jessie Tutor	Raul De la Torre	Rhett Willem P. Varilla
7	Senior Engineer responsible for Lecture	Alvin Cabueñas	Lecy Calma	-	James Surrot	James Surrot	Jessie Tutor	-	James Surrot
8	JICA Expert(Bridge Repair Pilot Project)	REP' Rodorigo Yago	Mamoru Izawa	Mamoru Izawa	Mamoru Izawa	REP' Rodorigo Yago	Mamoru Izawa	Mamoru Izawa	Mamoru Izawa

Figure 2.1.2.2-10 List of Lecturers during Field Training on Bridge Repair in TCP III

2.1.3 Capability of concerned engineers of ROs/DEOs in target Regions (II, III, VII, VIII, and XIII) on special bridge maintenance management is enhanced

2.1.3.1 Knowledge (level of understanding on manuals) and skills of engineers who participated in seminars/OJTs on maintenance management and inspections of special bridges are enhanced (60% of those engineers agree that their knowledge and skills on maintenance management and inspections of special bridges have been enhanced)

(1) Plan

In order to enhance knowledge (level of understanding on manuals) and skills of engineers of DPWH, JICA team/DPWH conduct seminars/OJTs on maintenance management and inspections of special bridges.

DPWH planned 10 days Field Training on Special Bridge Condition Inspection, Bridge Engineering Inspection and Load Rating for engineers of all regions in three blocs (Luzon, Visayas and Mindanao). For the training, Inspection Manuals developed in TCP II were to be used.

JICA team also planned 4th OJT on the special bridge inspection by Sustainability Program which was originally planned to be conducted in the duration of TCP-II but was postponed by the typhoon Yolanda that hit the Leyte Island on November 4, 2013.

Participants of the OJT learns how to use the Bridge Inspection Manual which developed in TCP II through lectures and field trainings.

At the beginning and the end of every Seminars/OJTs, Pre-Evaluation Sheet and Post-Evaluation Sheet are to be submitted from participants which are used to judge the participants' level of understanding of Seminars/OJTs. The judgement is that whether 60% of those engineers agree that their knowledge and skills on maintenance management and inspections of special bridges have been enhanced

(2) Evaluation of understanding level of Seminars/OJTs participants by Pre- and Post-training surveys

JICA team evaluated understanding level of Seminars/OJTs participants by Pre- and Post-training surveys.

a. 10 days Field Training on Bridge Engineering Inspection Using NDT and Special Bridge Condition Inspection

As shown in Figure below the Pre-Training Survey and the Post-Training Survey were conducted before and after the Training, respectively, in order to investigate how the participants' understanding ability improved. The Pre-Training Survey conducted revealed that the participants' rating is "**Nothing at All**".

As the result of Post-Training Survey, the most rating of the participants was "**Much**" and the next was "**Just Enough**". The participants made sufficient progress for understanding the content of Training.

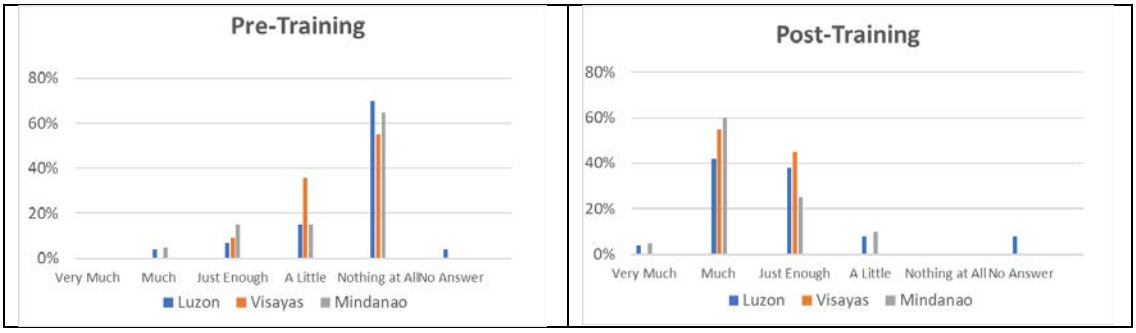


Figure 2.1.3.1-1 Level of Understanding on 10 days Field Training

The results of the training revealed that the participants have improved their knowledge and skills from 28.3% going up to 67.8 %.

From Figure 2.1.3.1-2, it is recognized that the degree of understanding is considerably higher after the OJT, and the understanding degree of participants is sufficiently over 60%.

Therefore, level of knowledge or understanding of most participants has been enhanced.

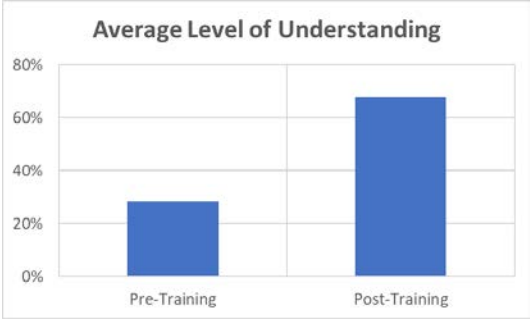


Figure 2.1.3.1-2 Average Level of Understanding on 10 days Field Training

b. OJT on Routine Maintenance Manual for Special Bridge

As shown in Figure 2.1.3.1-3, the Pre-Training Survey conducted revealed that the most of the participants ratings were "**Just Enough**" and "**A Little**".

However Post-Training Survey showed the most of the participants ratings were "**Very Much**" and" **Much**". The level of understanding of the participants was improved.

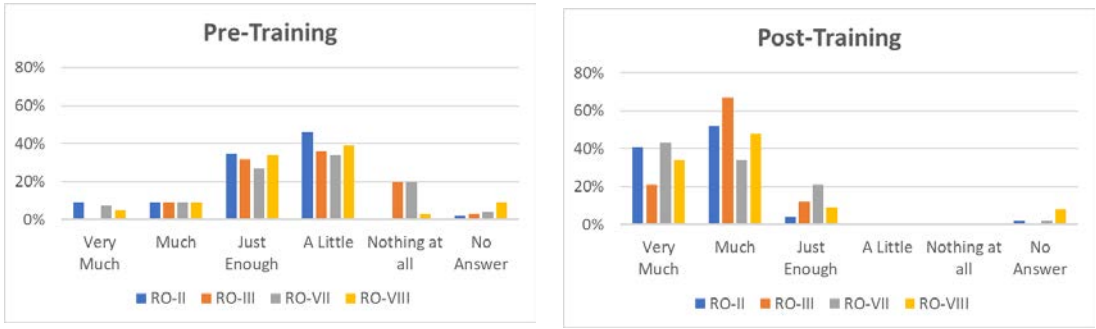


Figure 2.1.3.1-3 Level of Understanding on OJT on Routine Maintenance Manual

As shown in Figure 2.1.3.1-4, the Post-Training Survey conducted revealed that the participants have improved their Average Level of Understanding from 48.7% going up to 82.0 %.

Therefore, level of understanding of most participants has been enhanced.

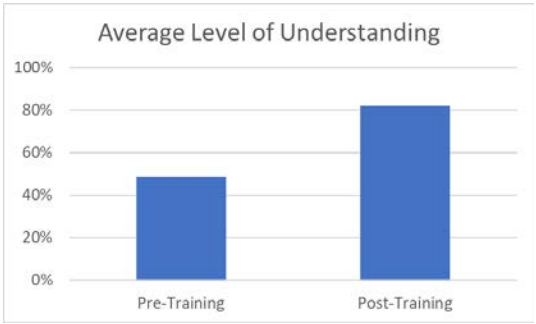


Figure 2.1.3.1-4 Average Level of Understanding on OJT on Routine Maintenance Manual

c. 4th OJT on special bridge inspections by Sustainability Program (RO-VIII)

As shown in Figure 2.1.3.1-5, the Pre-Training Survey conducted revealed that the most of the participants' ratings were **"Just Enough"**, "**A Little**" and **"Nothing at All"**.

However, Post-Training Survey showed the most ratings of the participants were items of **"Much"** and **"Just Enough"**. The level of understanding of the participants was improved.

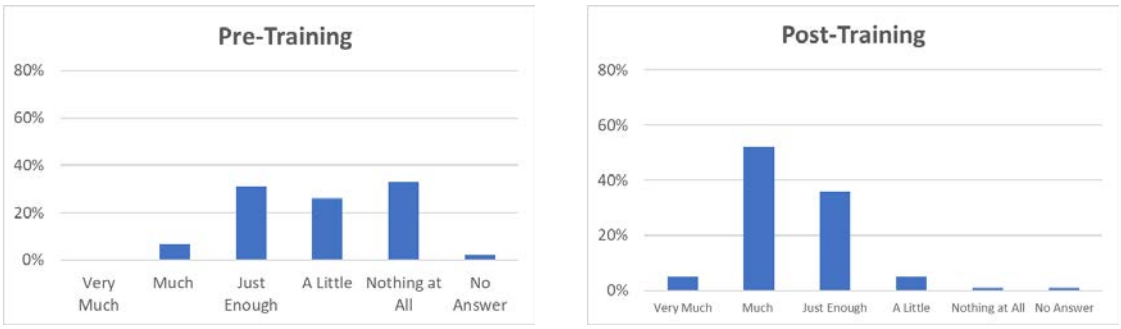


Figure 2.1.3.1-5 Level of Understanding on 4th OJT on special bridge inspections

As shown in Figure 2.1.3.1-6 the Post-Training Survey revealed that the participants have improved their Average Level of Understanding from 41.6% going up to 70.4 %.

The Average level of understanding of the participants has been enhanced.

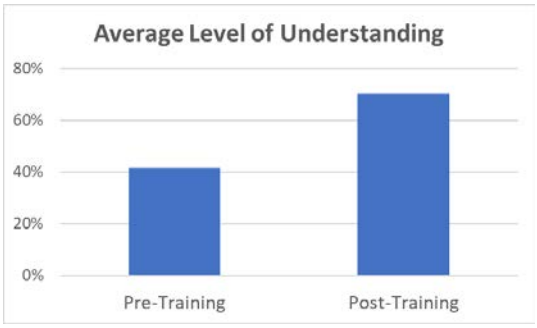


Figure 2.1.3.1-6 Average Level of Understanding on 4th OJT on special bridge inspections

2.1.3.2 4 Planned Pilot Projects on Special Bridge Repair are Implemented

(1) Magapit Bridge (RO-II)

Followings are evaluation of achievements in the light of purpose of the project and issues that have become evident in the course of implementing the project.

Achievements

- Some repair works have been completed as planned within TCP-III period.
- Knowledge and skills of C/Ps for special bridge repair were enhanced in the course of formulating the rehabilitation plan.
- Knowledge of C/Ps for special materials and special work methods were enhanced.
- Knowledge and skills of young engineers on special bridge repair were enhanced by two days OJT; 100% of participants found the training program was appropriate to the needs of DPWH.

Issues

- Some repair works have not been completed within TCP-III period due to some reasons.
- Some works were unsatisfactorily finished due to poor quality control. This is mainly due to lack of sense of compliance with technical standards, regulations, rules or relevant documents among concerned engineers.

(2) Bamban Bridge

Followings are evaluation of achievements in the light of purpose of the project and issues that have become evident in the course of implementing the project.

Achievements

- Some repair works have been completed as planned within TCP-III period.
- Knowledge and skills of C/Ps in formulating rehabilitation plan for special bridge were enhanced.
- Knowledge of C/Ps for special materials and special work methods were enhanced.
- Knowledge and skills of young engineers on special bridge repair were enhanced by two days OJT.

Issues

- Most of the defects were caused by stealing. So, in design and maintenance it should be directed that the stealing is not repeated. Fixing bolt and nut by epoxy is one of the countermeasures. The other deterrence is periodical routine maintenance by DPWH. When the stealing is detected, it is better to refill as soon as possible. It is not admissible that the stolen situation is kept intact.
- The maintenance of weathering steel is a concern. DPWH should have the master plan for maintenance of weathering steel bridge. Thinking that the defects of unstable rust are limited, appropriate measures would be possible with careful consideration. Advantage of weathering steel material is assumed to be the reduction of the maintenance costs.
- DPWH engineers are not accustomed to the practice of maintenance work flow. It is advisable that starting the maintenance works of the simple structure, so that the engineers can perform the practice. Without performing by themselves, it will not be accomplished. Special bridge maintenance is the extension of maintenance work of the ordinary bridge. Maintenance circle, "inspection, maintenance work, review, and documentation", should be repeated for the special bridge as well as the ordinary bridge. At the end of the TCP program, a fatigue crack was found. Dealing with a new task is the beginning of maintenance cycle. The first is the investigation of the defect.
- 8In RO III, repair design was performed by planning and design division, while repair work supervision was by maintenance division. But no business transfer was made, inconsistency arose. It is advisable business transfer should be made with good documentation after the contract.
- Fatigue crack found at the last day of the tenure is assumed serious. DPWH should take prompt and appropriate measures against the defect.

(3) Mactan Bridge

Followings are evaluation of achievements in the light of purpose of the project and issues that have become evident in the course of implementing the project.

Achievements

- Some repair works have been completed within TCP-III period as planned.
- Knowledge and skills of C/Ps in formulating rehabilitation plan for special bridge were enhanced.
- Knowledge of C/Ps for special materials and special work methods was enhanced.
- Knowledge and skills of young engineers on special bridge repair were enhanced by two days OJT.

Issues

- As for the 2013 and 2014 repair works, no report existed for the progress of the repair work. So the related pictures and documents to the repair works were collected to prepare a report of the repair work. In this work, the work plan and the final report were tried to be prepared by young engineers of DPWH.
- Follow up investigation was required for the special materials, so part of the scaffold was left and the initial follow up investigation was performed. Follow up investigation was required for previous repair works in 2013 & 14 as well. Past

experience told that repair work against salt corrosion was not able to be completed by single work. But DPWH decided the follow-up investigation was unnecessary.

- Safety comprises of 4 layers: 1) Safety by site engineers of contractor, 2) Safety by site engineer of DPWH, 3) Safety by HQ of contractor, 4) Safety by DPWH Main Office. The implementation of safety measures and the documentation of measures taken so far will enhance the safety on site.
- During repair work, there was a chance to inspect the superstructure at the abutment. It was so severely corroded that immediate action was required for the safety of traffic vehicles. Temporal support was recommended before the commencement of the repair work.

(4) Diosdado Macapagal Bridge

Followings are evaluation of achievements in the light of purpose of the project and issues that have become evident in the course of implementing the project.

Achievements

- Repair work was completed as planned.
- Knowledge of C/Ps for special materials and special work methods was enhanced.
- Knowledge and skills of C/Ps were enhanced in the course of formulating a rehabilitation plan.
- Knowledge and skills of young engineers on special bridge repair were enhanced by two days OJT; 100% of participants found the training program was appropriate according to needs of DPWH.
- Abnormality of the cables that requires detailed engineering investigation has become evident thorough a study by the JICA team.

Issues

- Although instructions for the works had been given to the contractor and C/Ps by the JICA team through the coordination meetings, intolerable faulty works were found on several work items: damaging of steel deck during removal of existing asphalt, inappropriate use of blasting media and mismanagement of thickness control of asphalt paving.
- Cracks occurred on repaved asphalt at certain locations and the cause of the cracks was considered the impact of heavily overloaded trucks. Although the JICA team had recommended RO-XIII to take action to improve the situation, the above defect was caused.
- Some repair works for the above cracks has been conducted by RO-XIII as of January 2019, however, there are still cracks or potholes which need the repair works to prevent the further development. In addition, no countermeasures to curb passage of overloaded trucks, which have significant power to damage the pavement, has been taken.

Abnormality of the cables must be studied further in order to prevent the development of structural damage.

2.1.4 Database system to be utilized for road and bridge maintenance management is developed

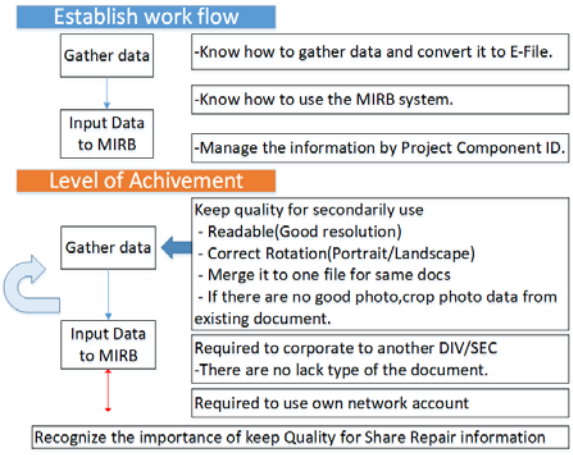
2.1.4.1 Operation of database system on road slope stability works and bridge repairs (including periodic maintenance) is started.

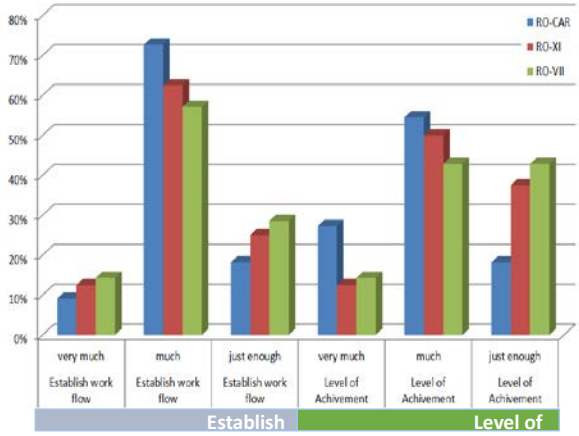
(1) Result of Monitoring

The Monitoring for 3 model regions was conducted three times by the JICA Team and DPWH C/Ps on January 2018 as follows.

Table 2.1.4.1-1 Monitoring Schedule

	Region	Date	Participants
	RO-CAR	January 10,11,2019	Alfredo D. Bannagao, Construction Div (CWG Member) Alvin Clark Dulnuan Maintenance Div (CWG Member)
	RO-XI	January 21,22,2019	Edgardo L. Pioquinto Maintenance Div (CWG Member) Pastor G.Padre, Jr BOM (CWG Member)
	RO-VII	January 24,25,2019	Norberto A. Galian, Jr. Maintenance Div. (CWG Member) Edgardo M.Bascug Jr. P& D Div(CWG Member) Pastor G.Padre, Jr BOM (CWG Member)





	Region	Number of Input data
1	CAR	40
2	XI	45
3	VII	40

Figure 2.1.4.1-1 Level of Achivement

(2) Remarks

- Advised them to use resize apps.
- Instructed the DEO's Engineers to store pictures of repair works (Before/During/After).
- Necessity of new PC and Scanner (The DPWH already prepare for procurement)
- Required to establish better Intranet Connection.
- Scanned documents in pdf files should be merged.
- Scanned documents in pdf files should be rotated to fix the position.
- Scanned images with big size should be converted to PDF format.

Project Purpose and Indicators

2.2 Project Purpose and Indicators

2.2.1 Objectively Verifiable Indicators

(1) Project Purpose

Road and bridge maintenance management works of DPWH are improved

(2) Objectively Verifiable Indicators

1. Maintenance management works on roads and bridges (including special bridges) are continued by ROs/DEOs in all Regions with utilizing manuals developed and/or revised by the Project
2. 34 additional construction projects on road slope stability and/or bridge repair are planned by 17 ROs with utilizing the database system developed by the Project

2.2.2 Level of Achievement

Project Purpose "Road and bridge maintenance management works of DPWH are improved" was achieved by the individual achievements of the activities listed below.

(1) Sustainability Program

DPWH has proposed sustainability program to ensure that the self-reliant operation is sustained after the Project. The details of sustainability program shows below.

Table 2.2.2-1 Sustainability Program

Purpose:	The capability of DPWH on road and bridge maintenance management, bridge condition/engineering inspection, special bridge condition inspection and special bridge maintenance in the 16 Regional Offices and 182 District Engineering Offices is improved.
Duration:	2 years (24 months) - February 2019 to January 2021
Organization:	1. Coordinating Committee (CC) Chairman – Undersecretary for Technical Services Vice-Chair – Assistant Secretary for Technical Services All Bureau Directors Planning Service Director Information Management Service Director All Regional Directors Project Manager and Deputy Project Managers 2. Management Team (MT) Project Manager, Deputy Project Managers All TWG Members 3. Counterpart Working Group (CWG)
Outputs:	1. Capability of engineers on road and bridge maintenance management is enhanced. 2. Capability of engineers on Bridge Condition/Engineering Inspection, Special Bridge Condition Inspection and Special Bridge Maintenance is enhanced. 3. Maintenance Information for Road Slope and Bridge Repair (MIRB) in the Database System is established/stored.
Activities:	**Road and Bridge Maintenance** <u>Activity 1</u>: To improve road and bridge maintenance on all national road network throughout the Philippines. - monitor pilot projects on road slope and bridge maintenance - conduct On the-Job-Training (OJT)/Echo-Training on Database

	System - conduct Echo-Training on Special Bridge Maintenance using appropriate maintenance equipment - conduct actual gathering/encoding of Maintenance Information for Road Slope and Bridge Repair (MIRB) **Bridge Inspection** Activity 2: To improve bridge inspection skills of DPWH engineers - facilitate and monitor the actual conduct of Bridge Engineering Inspection and Special Bridge Condition Inspection utilizing technical manuals developed under JICA-TCP II and III - actual conduct of Bridge Engineering Inspection and Special Bridge Condition Inspection using Non-Destructive Test (NDT) equipment and other support equipment. - conduct Echo-Training on Special Bridge inspection - monitor bridge inspection and repair work in DPWH
Budget (CY2019-2020)	Total Php 54.44 million for all Regions

(2) Proposed Department Order for Manuals and Guidelines

DPWH has proposed Department Order which is subjected to Technical Manuals and Guidelines on Road and Bridge Maintenance and Inspection in order to disseminate the eighteen revised/formulated technical manuals in all regional and district engineering offices.

(3) Proposed Department Order for MRIB

DPWH has proposed Department Order which is subjected to Maintenance Information on Road Slope and Bridge Repair (MRIB) in order to establish the MIRB in the database system.

(4) Additional Construction Projects

After the road slope stability and bridge repair pilot project were planned, conducted field training, and monitoring in TCP III, each RO/DEO has planned additional construction projects by their own funds. As an example, 184 bridge repair projects in accordance with BRM 2014 edition in all ROs in 2019 has been planned.

3 History of PDM Modification

A table below shows the history of the PDM Modification based on the Monitoring Sheets submitted to DPWH by the Project Team.

Table 3-1 History of PDM Modification

No.	Submission Date of Monitoring Sheets	PDM Modification	Version No. of the PDM
1	March 31, 2016 (1st JCC)	- Addition of Counterpart personnel from NIR office. - Modification of Activities 2-4; Monitor and evaluate situations of bridge maintenance and engineering inspections by ROs/DEOs.	1
2	September 27, 2016 (2nd JCC)	- Addition of Activities 1-1; Recommended List of Equipment/Tools for road maintenance. - Addition of Activities 2-1; Recommended List of Equipment/Tools for bridge maintenance. - Addition of Activities 2-2; Bridge Condition Data Review and Bridge Engineering Inspection. - Addition of Counterpart personnel from Non-Pilot Regional Offices (I, IV-A, IV-B, V, VI, IX, X and XII)	2
3	30 March, 2017 (3rd JCC)	- Addition of Counterpart personnel from NCR as Non-Pilot Regional Office.	3
4	10 October, 2017 (4th JCC)	- Addition of Activities 1-2; Conduct condition inspection of road slope protection in CAR using drone technology - Addition of Activities 3-3; Conduct condition inspection of special bridges in RO-II and RO-XIII using drone technology - Addition of Input from Japanese side; Video recording of Project activities - Addition of Input from Japanese side; Invitation to Observation Trip for the Road & Bridge Maintenance in Japan	4
5	03 April, 2018 (5th JCC)	None	5
6	26 October, 2018	None	6

4 Administration of the Project

4.1 Record of Joint Coordinating Committee (JCC) Meeting

Committee	JCC (Joint Coordinating Committee)
Purpose of meeting	1. To discuss and approve the annual work plan of the project to be formulated under the framework of R/D. 2. To evaluate the achievement of the annual work plan and overall progress of the Project. 3. To review and exchange opinions on major issues that arise during implementation of the Project.
Chairman	Undersecretary for Technical Services
Attendee (Philippine side)	Asst. Secretary for Technical Services Directors of PS, BOC, BOM, BOD, BRS, BQS, BOE, & IMS Regional Directors of CAR, NCR, I, II, III, IV-A, IV-B, V, VI, VII, VIII, IX, X, XI, XII, &XIII Project Manager, Deputy Project Manager, Representative of NEDA Project Area Managers Other CWG members
Attendee (Japanese side)	Representative of JICA Philippines Office Representative of Embassy of japan JICA Experts
No./Date/No. of Attendees	1st JCC: March 31, 2016 / 56 2nd JCC: September 30, 2016 / 39 3rd JCC: March 5, 2017 / 41 4th JCC: October 10, 2017 / 38 5th JCC: April 3, 2018 / 38 6th JCC: August 7, 2018 / 48 7th JCC: February 1, 2019 / 55
Photos	   

Figure 4.1-1 Record of JCC Meetings

4.2 Record of Technical Working Group (TWG) Meeting

Committee	TWG (Technical Working Group)
Purpose of meeting	1. Examine issues related to Maintenance Management Cycle. 2. Review materials prepared by CWG and provide advices. 3. Others
Chairman	Project Manager
Attendee (Philippine side)	To be selected from the concerned division chiefs, Counterparts, other members
Participant (Japanese side)	JICA Experts
No./Date/No. of Attendee	1st TWG: December 8,2017 / 19 2nd TWG: January 24, 2018 /23 3rd TWG: April 4, 2018 / 13
Photo	 

Figure 4.2-1 Record of TWG Meetings

4.3 Record of Monthly Meeting

Committee	MM (Monthly Meeting)
Purpose of meeting	1. To address monitor progress of work and plan monthly activity schedules. 2. To settle arising issues project
Chairman	Project Manager
Attendee (Philippine side)	TWG members, Selected CWG members
Attendee (Japanese side)	Representative of JICA Philippines Office JICA Experts
No./Date/No. of Attendees	1st MM: April 26, 2016 / 24 2nd MM: May 16, 2016 / 8 3rd MM: July 5, 2016 / 9 4th MM: August 18, 2016 / 9 5th MM: September 12, 2016 / 9 6th MM: November 17, 2016 / 13 7th MM: December 16, 2016 / 17 8th MM: February 9, 2017 / 18 9th MM: March 15, 2017 / 20 10th MM: May 26, 2017 / 17 11th MM: July 4, 2017 / 17 12th MM: August 25, 2017 / 24 13th MM: September 13, 2017 / 18 14th MM: October 10, 2017 / 21 15th MM: November 13, 2017 / 8 16th MM: December 8, 2017 / 19 17th MM: January 17, 2018 / 17 18th MM: February 20, 2018 / 16 19th MM: April 3, 2018 / 19 20th MM: May 2, 2018 / 17

	21st MM: June 19, 2018 / 19 22nd MM: July 17, 2018 / 14 23rd MM: August 7, 2018 / 15 24th MM: October 3, 2018 / 37 25th MM: November 15, 2018 / 12 26th MM: December 7, 2018 / 23 27th MM: January 9, 2019 / 18
Photos	 

Figure 4.3-1 Record of Monthly Meetings

4.4 Record of Counterpart Working Group Meeting (CWG)

4.4.1 Road Maintenance / Road Slope

Table 4.4.1-1 Record of CWG Meetings on Road Maintenance/Road Slope

Committee	CWG (Counterpart Working Group) on Road Maintenance/ Road Slope
Purpose of meeting	1. To be established for each activity. 2. Undertake works related to revision and preparation of materials. 3. Others
Chairman	Selected from CWG member on Road Maintenance/ Road Slope
Attendee (Philippine side)	CWG member on Road Maintenance / Road Slope
Attendee (Japanese side)	JICA Experts (Road Maintenance / Road Slope)
No./Date/No. of Attendees	1st CWG: August 12, 2016 / 11 2nd CWG: September 16, 2016 / 12 3rd CWG: November 28, 2016 / 11 4th CWG: December 16, 2016 / 10 5th CWG: February 21, 2017 / 15 6th CWG: April 21, 2017 / 19 7th CWG: April 17, 2017 / 17 8th CWG: October 20, 2017 / 9 9th CWG: November 16, 2017 / 7 10th CWG: December 7, 2017 / 14 11th CWG: January 17, 2018 / 22 12th CWG: July 10, 2018 / 10 13th CWG: July 30, 2018 / 9 14th CWG: October 3, 2018 / 12

4.4.2 Bridge Maintenance / Bridge Repair

Table 4.4.2-1 Record of CWG Meeting on Bridge Maintenance/Bridge Repair

Committee	CWG (Counterpart Working Group) on Bridge Maintenance/ Bridge Repair
Purpose of meeting	1. To be established for each activity. 2. Undertake works related to revision and preparation of

	materials. 3. Others
Chairman	Selected from CWG member on Bridge Maintenance/Bridge Repair
Attendee (Philippine side)	CWG member on Bridge Maintenance/Bridge Repair
Attendee (Japanese side)	JICA Experts (Bridge Maintenance/Bridge Repair)
No./Date/No. of Attendees	1st CWG: April 26, 2016 / 12 2nd CWG: August 8, 2016 / 13 3rd CWG: November 17, 2016 / 16 4th CWG: January 9, 2017 / 17 5th CWG: April 25, 2017 / 20 6th CWG: August 15, 2017 / 14 7th CWG: October 30, 2017 / 7 8th CWG: November 21, 2017 / 13 9th CWG: January 23, 2018 / 21 10th CWG: March 15, 2018 / 11 11th CWG: May 22, 2018 / 18 12th CWG: October 9, 2018 / 11 13th CWG: November 16, 2018 / 18 14th CWG: December 4, 2018 / 13 15th CWG: January 15, 2019 / 13

4.4.3 Special Bridge Maintenance

Table 4.4.3-1 Record of CWG Meeting on Special Bridge Maintenance

Committee	CWG (Counterpart Working Group) on Special Bridge Maintenance
Purpose of meeting	1. To be established for each activity. 2. Undertake works related to revision and preparation of materials. 3. Others
Chairman	Selected from CWG member on Special Bridge Maintenance
Attendee (Philippine side)	CWG member on Special Bridge Maintenance
Attendee (Japanese side)	JICA Experts (Special Bridge Maintenance)
No./Date/No. of Attendees	1st CWG: May 16, 2016 / 6 2nd CWG: June 9, 2016 / 13 3rd CWG: August 2, 2016 / 20 4th CWG: August 9, 2016 / 15 5th CWG: August 31, 2016 / 13 6th CWG: November 22, 2016 / 24 7th CWG: December 16, 2016 / 12 8th CWG: February 9, 2017 / 19 9th CWG: March 30, 2017 / 13 10th CWG: May 24, 2017 / 25 11th CWG: July 5, 2017 / 23 12th CWG: July 12, 2017 / 28 13th CWG: September 14, 2017 / 6 14th CWG: September 19, 2017 / 6 15th CWG: September 22, 2017 / 5 16th CWG: September 26, 2017 / 4 17th CWG: September 28, 2017 / 5 18th CWG: October 11, 2017 / 13

	19th CWG: November 23, 2017 / 5 20th CWG: December 6-7, 2017 / 16 21st CWG: January 24, 2018 / 7 22nd CWG: July 17, 2018 / 13 23rd CWG: November 16, 2018 / 18

4.4.4 Database System

Table 4.4.4-1 Record of CWG Meetings on Database System

Committee	CWG (Counterpart Working Group) on Database System
Purpose of meeting	1. To be established for each activity. 2. Undertake works related to revision and preparation of materials. 3. Others
Chairman	Selected from CWG member on Database System
Attendee (Philippine side)	CWG member on Database System
Attendee (Japanese side)	JICA Experts (Database System)
No./Date/No. of Attendees	1st CWG: September 6, 2016 / 12 2nd CWG: November 21, 2016 / 8 3rd CWG: March 8, 2017 / 9 4th CWG: July 3, 2017 / 13 5th CWG: July 24, 2017 / 9 6th CWG: October 9, 2017 / 10 7th CWG: December 4, 2017 / 25 8th CWG: February 19, 2018 / 7 9th CWG: April 4, 2018 / 15 10th CWG: July 10, 2018 / 6 11th CWG: August 6, 2018 / 5 12th CWG: October 24, 2018 / 6

4.5 Counterpart Training Program on Road and Bridge Maintenance Management in Japan

To enhance the technical knowledge on roads and bridge (including special bridge) maintenance and to encourage exchange of technical opinions, the C/Ps, nominated by DPWH attended training in Japan for each year.

The purpose of the training was to learn specific technologies for planning and implementation of road/ bridge maintenance management through the cases in Japan.

The 1st and 2nd batch covered "maintenance technology of road pavement and road slope" and "the bridge maintenance management technology" including bridge inspection and bridge repair technology, and the 3rd batch covered the "special bridge maintenance management technology".

4.5.1 1st Batch in 2016 (Road/ Bridge Maintenance Management)

(1) Period

1 November, 2016 to 16 November, 2016

(2) Participants

1. Blesilda S. Ramos, Engr. IV, Bureau of Design
2. Teofila SF Borlongan, Engr. IV, Bureau of Maintenance
3. Norman G. Abayabay, Engr. II, Region VII
4. Justino Jaime T. Surot, Jr., Engr. III, Planning and Service
5. Nerio A. Anisco, Engr. II, Bureau of Research and Standard

6. Noe O. Bonga, Engr. II, Bureau of Maintenance
7. Ezekiel M. Bravo, Engr. II, Bureau of Research and Standard
8. Patrick G. Tolentino, Engr. II, Bureau of Construction

(3) Training Schedule

Table 4.5.1-1 Schedule of 1st Batch

Date		Time			Program	Lecturer
1-Nov	Tue				Arrival in Japan	
2-Nov	Wed	10:00	～	12:30	Briefing	
		14:00	～	14:30	Program Orientation	Nippon Engineering Consultants Co., Ltd.
		15:00	～	17:00	Lecture on Bridge Maintenance Management in Japan	Ministry of Land, Infrastructure, Transport and Tourism
		15:00	～	17:00	Lecture on Bridge Maintenance Management in Japan	Nippon Engineering Consultants Co., Ltd.
3-Nov	Thu	10:30	～	12:30	Visit to the Construction Site of Meiko Nishi Bridge Seismic Strengthening Work	Takigami Steel Construction
		14:00	～	14:30	Introduction of Takigami Main Plant and Lecture on How to Fabricate the Steel Bridge	Takigami Steel Construction
		14:30	～	16:30	Takigami Main Plant Tour	
4-Nov	Fri	10:00	～	11:00	NIPPO Okazaki Mixture Plant Tour	NIPPO Corporation
		13:30	～	14:30	Lecture on Recycled Asphalt Mixing Plant	
		14:30	～	16:00	Lecture on Maintenance/Repair and Pavement Technologies of Asphalt Concrete Pavement	
		16:00	～	17:00	Lecture on Pavement Repair and Demonstration of Crack Injection	TAC Corporation
5-Nov	Sat					
6-Nov	Sun					
7-Nov	Mon	9:30	～	11:00	Visit to the Construction Site of Kawanishi Interchange (Slope Protection)	NITTOC Constraction Co.,Ltd.
		13:00	～	15:00	Visit to the Construction Site of Left Bank Slope Protection of Aigawa Dam	
		16:00	～	17:00	Visit to the Site of Slope Disaster Ricovery Construction Using Geofiber Method at Kiyomizu Temple	
8-Nov	Tue	9:15	～	10:30	Observation : Akashi Kaikyo Bridge Exhibition Center	Honshu-Shikoku Bridge Expressway Co.,Ltd.
		10:30	～	11:10	Lecture on Bridge Maintenance Management in Honshu-Shikoku Bridge Expressway Co., Ltd.	
		13:15	～	14:30	Observation : Akashi Kaikyo Bridge（walk on the maintenance path in the girder and go up on the top）	
9-Nov	Wed	9:30	～	10:00	Introduction of Taiheiyo Materials Corporation	Taiheiyo Materials Corporation

		10:00	～	11:30	Lecture on Bridge Repair Materials	
		14:00	～	14:30	Introduction of Alpha Kogyo K.K. and Bridge Repair Materials	Alpha Kogyo K.K.
		14:30	～	15:30	Product Testing in Laboratory	
		15:30	～	16:00	Visit to the Project Site Using ALPHATEC Products	
10-Nov	Thu	11:00	～	11:20	Introduction of Overview of the Technical Training Center	NEXCO-East Group Technical Training Center
		11:20	～	12:20	Lecture on Inspection and Repair Methods of Bridge	
		13:00	～	14:30	Facility Tour (Civil Engineering/Facilities Engineering)	
		15:00	～	16:30	Practical Training of Bridge Inspection @ Gomyo Bridge Training Site	
11-Nov	Fri	10:30	～	11:00	Observation : Construction Site of Yamba Dam	Asahi Kasei Advance Corporation
		11:15	～	11:45	Observation : Project Site of Road Slope Protection on NH145	
		13:15	～	13:45	Observation : Project Sites of Road Slope Protection on NH292	
		14:00	～	14:30	Observation : Fudo Bridge and the Project Sites of Road Slope Protection	
12-Nov	Sat				Observation : Bridges in Tokyo area	
13-Nov	Sun					
14-Nov	Mon	10:30	～	11:50	Lecture on Road Pavement Maintenance Management	Public Works Research Institute
		13:10	～	14:30	Lecture on Maintenance Management of Concrete Bridge	
		14:45	～	15:10	Facility Tour (Pavement Test Field)	
		15:15	～	15:40	Facility Tour (Storage for Removed Materials for Clinical Research)	
		15:45	～	16:10	Facility Tour (Structural Dynamics Laboratory /Wheel Running Machine)	
15-Nov	Tue	8:00	～	12:00	Preparation for Action Plan	
		13:00	～	15:00	Action Plan Presentation Evaluation Meeting on the Training Course and Closing Ceremony	JICA Tokyo Nippon Engineering Consultants Co., Ltd.
16-Nov	Wed				Leave to Manila	

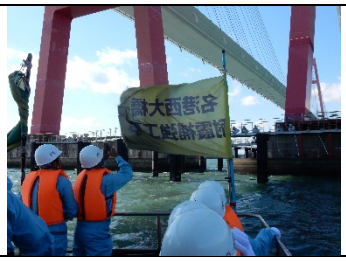
	
Construction Site of Meiko Nishi Bridge Seismic Strengthening Work	NIPPO Okazaki Mixture Plant Tour
	
Construction Site of Left Bank Slope Protection of Aigawa Dam	Product Testing in Laboratory @ Alpha Kogyo

Figure 4.5.1-1 Photos of 1st Batch

4.5.2 2nd Batch in 2017 (Road/ Bridge Maintenance Management)

(1) Period

18 September, 2017 to 4 October, 2017

(2) Participants

1. Krezia L. Morales, Engr. II, Bureau of Maintenance
2. Alvin Clark M. Dulnuan, Engr. II, CAR
3. Irewill D. Flores, Engr. II, Region XIII
4. Renarto Reiner M. Victorio, Engr. II, Bureau of Design
5. Greg Matthew D. Yee, Engr. II, Region XI
6. Yvan Paul D. Vicera, Engr. II, Bureau of Construction
7. Nelson B. Comedia, Engr. II, Region VII
8. Theresa A. Duero, Engr. II, Region VIII

(3) Training Schedule

Table 4.5.2-1 Schedule of 2nd Batch

Date		Time			Program	Lecturer
18-Sep	Mon				Arrival in Japan	
19-Sep	Tue	10:00	～	12:30	Briefing	JICA Tokyo International Center
		13:30	～	14:00	Program Orientation	Nippon Engineering Consultants Co., Ltd.
		14:00	～	15:00	Lecture on Maintenance Management of Road Structures	Ministry of Land, Infrastructure, Transport and Tourism
		15:30	～	16:30	Lecture on Bridge Maintenance Management in Nagasaki Prefecture	Nippon Engineering Consultants Co., Ltd.
20-Sep	Wed	10:00	～	11:30	Introduction of Alpha Kogyo K.K. and Bridge Repair Materials	Alpha Kogyo K.K.
		11:30	～	12:00	Product Demonstration in Laboratory	

		13:00	～	16:00	Product Demonstration in Laboratory Visit to the Project Site Using ALPHATEC Products	
		16:20	～	16:50	Visit to the Project Sites Using ALPHATEC Products	
21-Sep	Thu	11:00	～	12:20	Introduction of Overview of the Technical Training Center Lecture on Inspection and Repair Methods of Bridge	NEXCO-East Group Technical Training Center
		13:00	～	14:30	Facility Tour (Civil Engineering/Facilities Engineering)	
		15:00	～	16:30	Practical Training of Bridge Inspection at Bridge Training Site	
22-Sep	Fri	10:30	～	11:10	Yamba Inbound Tour	Yamba Dam Construction Office Kanto Regional Development Bureau, Ministry of Land, Infrastructure, Transport and Tourism
		11:25	～	11:45	Observation : Project Sites of Road Slope Protection on NH292	Asahi Kasei Advance Corporation
		13:10	～	13:50	Observation : Project Sites of Road Slope Protection (Under Construction)	
23-Sep	Sat	9:30	～	16:30	Observation : Bridges in Tokyo area: Rainbow Bridge, Tokyo Gate Bridge	Nippon Engineering Consultants Co., Ltd.
24-Sep	Sun	14:00	～	16:30	Observation : Suirokaku (a high-rise waterway structure) / Nanzen-ji Temple	
25-Sep	Mon	9:00	～	10:00	Lecture on Rokko Sabo Office Explanation of Outline of Work	Rokko Sabo Office, Ministry of Land, Infrastructure, Transport and Tourism
		10:00	～	10:30	Facility Tour : Model Experiment of Debris Flow	
		10:50	～	11:55	Observation : Road Slope Protection Site (Yakigahara Dike, Construction Site in Takaha Area)	
		14:40	～	16:00	Observation : 2 Road Slope Protection Site with Nonframe Construction Method in Shiga Prefecture	Nippon Steel & Sumikin Metal Products Co., Ltd.
		17:30	～	17:40	Observation : Road Slope Protection Site with Nonframe Construction Method in Kobe	
26-Sep	Tue	9:30	～	11:00	Lecture on Bridge Repair Technology	TORAY Industries, Inc.
		13:25	～	13:55	Observation : Bridge Repair Project Site	
27-Sep	Wed	9:15	～	10:05	Lecture on Bridge Maintenance Management in Honshu-Shikoku Bridge Expressway Co., Ltd.	Honshu-Shikoku Bridge Expressway Co.,Ltd.
		10:05	～	11:00	Observation : Akashi Kaikyo Bridge Exhibition Center	
		11:30	～	12:10	Observation : Traffic Operations Center	
		13:45	～	15:15	Visit and go up on the top of Akashi Kaikyo Bridge	

					(walk on the maintenance path in the bridge girder)	
28-Sep	Thu	7:50	~	8:15	Seto Ohashi Bridge (Yoshima PA)	Nippon Engineering Consultants Co., Ltd.
		9:00	～	12:00	Facility Tour in Shikoku Plant (Manufacture of steel bridges and steel-concrete bridges and beams)	Kawada Industries, Inc.
					Practical Training of Nondestructive Testing	
					Shimanami Kaido Expressway (Kurushima SA, Setoda PA, Ohama PA)	Nippon Engineering Consultants Co., Ltd.
29-Sep	Fri	8:50	～	9:50	Observation : Road Slope Protection Site with Nonframe Construction Method (Under Construction)	Nippon Steel & Sumikin Metal Products Co., Ltd.
		11:10	～	11:30	Observation : Road Slope Protection Site (Flexible Mighty Fence)	Tokyo Rope MFG. Co., Ltd.
		13:20	～	15:30	Observation: Road Slope Protection Sites (Rock Fence, Pocket-type Rock Fence, Curtain Net, Pocket-type Rock Net, Anchor, etc.)	
30-Sep	Sat	8:30	～	14:30	Hiroshima Peace Memorial Museum Hiroshima's Atomic Bomb Dome	Nippon Engineering Consultants Co., Ltd.
					Itsukushima Shrine on Miyajima	
1-Oct	Sun				Data-compiling, Preparation for Action Plan	
2-Oct	Mon	10:30	～	11:50	Lecture on Road Pavement Maintenance Management	Public Works Research Institute
		13:10	～	14:30	Lecture on Maintenance Management of Bridge	
		14:45	～	15:10	Facility Tour : Pavement Test Field	
		15:15	～	15:40	Facility Tour : Storage for Removed Materials for Clinical Research	
		15:45	～	16:10	Facility Tour : Embankment Test Field	
3-Oct	Tue	9:00	～	12:00	Preparation for Action Plan	
		13:00	～	14:00	Action Plan Presentation	JICA Nippon Engineering Consultants Co., Ltd.
		14:00	～	14:30	Evaluation Meeting on the Training Course and Closing Ceremony	
4-Oct	Wed				Leave to Manila	

Product Demonstration in Laboratory at Alpha Kogyo Plant

Practical Training of Bridge Inspection at Bridge Training Site

	
Facility Tour in Kawada Plant (Manufacture of steel bridges and steel-concrete bridges and beams)	Road Slope Protection Site with Non-frame Construction Method (Under Construction)

Figure 4.5.2-1 Photos of 2nd Batch

4.5.3 3rd Batch in 2018 (Special Bridge Maintenance Management)

(1) Period

2 September, 2018 to 15 September, 2018

(2) Participants

1 Pastor G. Padre, Jr., Engr. II, Bureau of Maintenance
2 Mark Andrew L. Delgado, Engr. II, Bureau of Maintenance
3 Ariel S. Amor, Engr. II, Region NCR
4 Dexter L. Cabanero, Engr. II, Region I
5 Jilian Rose D. Atinado, Engr. II, Region VI
6 Bryan James Pitos, Engr. II, Region XIII
7 Edgardo L. Pioquinto, Engr. II, Region XI

(3) Training Schedule

Table 4.5.3-1 Schedule of 3rd Batch

Date		Time			Program	Lecturer
2-Sep	Sun				Arrival in Japan	
3-Sep	Mon	10:00	～	12:30	Briefing	JICA Tokyo International Center
		13:30	～	14:00	Program Orientation	Nippon Engineering Consultants Co., Ltd.
		14:00	～	16:00	Lecture on Current Practice for a Full-scale Maintenance of Aging Road Bridges	Japan Bridge Engineering Center
4-Sep	Tue	10:00	～	11:30	Introduction of Alpha Kogyo K.K. and Bridge Repair Materials	Alpha Kogyo K.K.
		11:30	～	12:00	Product Demonstration in Laboratory	
		13:00	～	15:30	Product Demonstration in Laboratory	
		15:30	～	16:00	Visit to the Project Site Using ALPHATEC Products	
5-Sep	Wed	10:30	～	12:00	Lecture on Road Pavement Maintenance Management	Public Works Research Institute
		13:00	～	14:30	Lecture on Maintenance Management of Bridge	
		14:45	～	15:15	Facility Tour : Pavement Test Field	
		15:30	～	16:00	Facility Tour : Storage for Removed Materials for Clinical Research	
		16:10	～	16:30	Facility Tour : Embankment Test Field	

6-Sep	Thu	13:00	～	14:00	Lecture on Actual Status of Bridge Maintenance Management in Nagasaki Prefecture	Nagasaki Prefecture
		14:45	～	15:45	Observation : Iojima Bridge (3-span continuous steel deck curved box girder)	
7-Sep	Fri	9:00	～	10:00	Observation : Megami Bridge (Cable-stayed bridge)	Nagasaki Prefecture
		11:30	～	12:30	Observation : Saikai Bridge (Steel braced rib arch)	
		14:00	～	15:00	Observation : Oshima Bridge (Steel cable-stayed bridge)	
8-Sep	Sat	9:30	～	10:30	Nagasaki Atomic Bomb Museum	
		11:00	～	11:30	Dejima Main Gate Bridge, Dejima	
		11:40	～	11:50	Megane Bridge	
9-Sep	Sun	11:20	～	12:00	Observation : Suirokaku (a high-rise waterway structure) / Nanzen-ji Temple	
		12:30	～	13:20	Kinkakuji Temple	
10-Sep	Mon	9:15	～	10:15	Lecture on Bridge Maintenance Management in Honshu-Shikoku Bridge Expressway Co., Ltd.	Honshu-Shikoku Bridge Expressway Co.,Ltd.
		10:45	～	11:25	Observation : Traffic Operations Center	
		13:10	～	14:40	Visit and go up on the top of Akashi Kaikyo Bridge (walk on the maintenance path in the bridge girder)	
		15:00	～	16:00	Observation : Nojima Fault Preservation Museum	Nippon Engineering Consultants Co., Ltd.
11-Sep	Tue	13:30	～	14:00	Introduction of Toyama Plant of Kawada Industries, Inc.	Kawada Industries, Inc.
		14:00	～	16:30	Plant Tour (Manufacture of girder and SC deck)	
12-Sep	Wed	9:00	～	9:30	Lecture on Maintenance Management of Shinminato Bridge	
		10:00	～	11:00	Observation : Shinminato Bridge (Cable-stayed bridge)	
13-Sep	Thu	9:30	～	10:50	Introduction of Overview of the Technical Training Center Lecture on Inspection and Repair Methods of Bridge	NEXCO-East Group Technical Training Center
		11:00	～	12:00	Facility Tour (Civil Engineering/Facilities Engineering)	
		13:00	～	14:30	Practical Training of Bridge Inspection at Bridge Training Site	
14-Sep	Fri	9:00	～	12:00	Preparation for Action Plan	
		13:00	～	14:00	Action Plan Presentation	Japan International Cooperation Agency Nippon Engineering Consultants Co., Ltd.
		14:00	～	14:30	Evaluation Meeting on the Training Course and Closing Ceremony	
15-Sep	Sat				Leave to Manila	

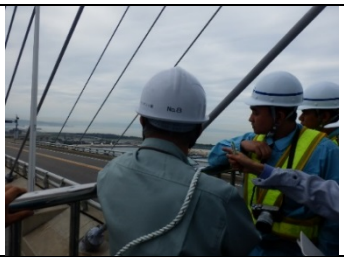
	
Lecture on Road Pavement Maintenance Management @PWRI	Observation : Megami Bridge (Cable-stayed bridge)
	
Observation: Traffic Operations Center	Observation: Shinminato Bridge (Cable-stayed bridge)

Figure 4.5.3-1 Photos of 3rd Batch

4.6 Japan Invitation Program

DPWH requested JICA to introduce new technology of road and bridge maintenance equipment in Japan at 1st JCC on March 31, 2016, JICA agreed to provide information of maintenance equipment on road & bridge.

In order to enhancement of maintenance management, JICA plan to invite DPWH executives for study of road and bridge maintenance management in Japan. In particular, road & bridge maintenance equipment.

(1) Period

15 October, 2017 to 24 October, 2017

(2) Participants

1 Mr. Gilberto S. Reyes, Assistant Secretary for Technical Services
2 Mr. Ermesto S. Gregorio, Jr., Director, Bureau of Maintenance
3 Mr. Toribio Noel L. Ilao, Director, Bureau of Equipment
4 Mr. Aristarco M. Doroy, Assistant Director, Bureau of Construction, Project Manager in TCP-III
5 Ms. Nenita R. Jimene, Division Chief, DPD, Planning Service, Deputy Project Manager in TCP-III
6 Mr. Carlos P. Ebora, Division Chief Quality Compliance, Bureau of Quality and Safety
7 Ms. Rowena P. Jamito, Division Chief Maintenance in RO-XI, Project Area Manager in Mindanao
8 Ms. Rosario C. Calves, Division Chief Maintenance in RO-VII, Project Area Manager in Visayas
9 Ms. Ma. Soledad Q. Balisi, DPD, Planning Service, Coordinator in TCP-III

(3) Schedule

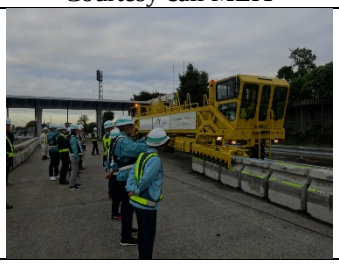
Table 4.5.3-1 Japan Invitation

Date		Time			Program	
15-Oct	SUN				Arrival in Japan	
16-May	MON	9:30	～	10:00	Courtesy call JICA	JICA Tokyo
		10:40	～	11:00	Courtesy call MLIT	Ministry of Land, Infrastructure, Transport and Tourism
		13:30	～	14:30	National Highway Route 357 Tokyo Port Tunnel Construction / Maintenance	MLIT Kanto Regional Development Bureau Kawasaki National Highway Office
		15:00	～	16:00		MLIT Kanto Regional Development Bureau Tokyo National Highway Office
17-May	TUE	10:00	～	11:00	Introduction of MLIT Kanto Technical Office Observation : Maintenance Equipment	MLIT Kanto Technical Office
						MLIT Kanto Regional Development Bureau Tokyo National Highway Office
		13:40	～	14:40	Introduction of Road Zipper	East Nippon Expressway Company Limited
		15:00	～	16:00	Observation : Moriya SA (Disaster Prevention)	
		16:30	～	17:30	Demonstration of Road Zipper	
18-May	WED	12:30	～	14:30	Observation : Maintenance Equipment	HANTA MACHINERY Co.,Ltd
		15:30	～	17:00	Observation : Construction Equipment	Komatsu Ltd.
19-Oct	THU	10:00	～	12:00	Courtesy call Discussion about Road Maintenance Introduction and Discussion about Expressway Renewal Project	Hanshin Expressway Company Limited
		13:30	～	14:30	Observation : Maintenance Equipment (Road sweepers)	
		15:00	～	16:30	Observation : Kobe Earthquake Museum	
		17:00	～	17:15	Observation : Hanshin Expressway (Highway that goes through a Building)	
20-Oct	FRI	10:00	～	11:00	Courtesy call Discussion about Maintenance Management Introduction of Bridge Maintenance Management in Honshu-Shikoku Bridge Expressway Co., Ltd.	Honshu-Shikoku Bridge Expressway Co.,Ltd.
		11:40	～	12:10	Observation : Akashi Kaikyo Bridge Exhibition Center	
		12:40	～	13:20	Traffic Operations Center Observation : Maintenance Equipment Introduction of Maintenance of Tunnel	
		14:45	～	16:30	Visit and go up on the top of Akashi Kaikyo Bridge (walk on the maintenance path in the bridge girder)	

21-Oct	SAT					
22-Oct	SUN					
23-Oct	MON	9:30	～	11:30	Observation: Road Surface Marking Equipment	KICTEC INC.
		13:00	～	15:00	Demonstration of Sealing of Cracking of Concrete Pavement Fabrication of Steel Bridge	Takigami Steel Construction
24-Oct	TUE	9:30	～	10:30	Wrap Up Meeting	JICA Tokyo
		17:20			Leave to Manila	

Courtesy call MLIT

National Highway Route 357 Tokyo Port Tunnel



Demonstration of Road Zipper

Observation: Road Surface Marking Equipment

Figure 4.6-1 Photos of Japan Invitation

4.7 Training in the Third Country

Similar to the project in the Philippines, the technical cooperation project in Cambodia also aims to improve the capacity of road and bridge maintenance management.

Visiting the pilot project site for bridge repair in Cambodia shall be utilized for improving road and bridge maintenance technology in the Philippines. Exchanging opinion of engineers from both countries and sharing the issues and improvements which both parties are facing is mutual benefit within and across regions.

The personnel development of those engineers through this training in the third country was beneficial to promote implementation of work plan for this project.

(1) Period

10 December, 2017 to 17 December, 2017

(2) Participants

1 Aristarco M. Doroy, Project Manager
2 Nerie Bueno, JCC member
3 Medmier G. Malig, TWG member
4 Justino Jaime T. Surot, Jr., BMS, Bridge Maintenance
5 Ronalyn P. Ubiña, Special Bridge Maintenance (RO-II)
6 Rosario C. Calves, Special Bridge Maintenance (RO-VII)
7 Ruel M. Nazareno, Special Bridge Maintenance (RO-XIII)
8 Recy L. Calma, Special Bridge Maintenance (RO-III)
9 Adelina P. Gomez, Special Bridge Maintenance (RO-VIII)

(3) Training Schedule

Table 4.5.3-1 Training in the Third Country

		Itinerary	Visit
10-Dec	Sun	Manila 1000- Singapore 1350 (PR507) Singapore 1630- Phnom Penh 1725 (MI608)	
11-Dec	Mon	Courtesy call (JICA office) Courtesy call (MPWT)	・JICA-Office ・MPWT
12-Dec	Tue	Site Visit Tsubasa Bridge Bridge Repair Project Charoy Changwar Bridge Phnom Penh - SihanoukVille	Japan ODA project Pilot Project (Bridge Repair)
13-Dec	Wed	Bridge Maintenance Workshop (ME Training) Lecture	
14-Dec	Thu	Bridge Maintenance Workshop (ME Training) Lecture SihanoukVille - Phnom Penh	
15-Dec	Fri	JICA Cambodia office MPWT Phnom Penh1335-Siem Reap 1430 (K6109)	・JICA-Office ・MPWT
16-Dec	Sat	Siem Reap 1550- Singapore 1920 (MI615)	
17-Dec	Sun	Singapore 0020-Manila 0355 (PR510)	

Pilot Project Site of Bridge Repair

Plant of Bridge Repair Material

Bridge Maintenance Workshop (ME Training)

Joint Workshop with RID

Figure 4.7-1 Photos of Training in the Third Country

5 Publicity Activity

5.1 DPWH Website

TCP III was first publicized in DPWH website on March 2016. The Project website in DPWH website was built with greeting message from chairperson and vice chairperson of JCC and project manager, introduction, outline of the Project, project organization, DPWH C/Ps and JICA experts.

The Project News was published each year on the Project website.

1. June 24, 2016: 1st Joint Coordinating Committee (JCC) Meeting
2. June 24, 2016: Seminars on Sustainability Program
3. September 22, 2017: Road Slope 2nd Field Training

4. September 22, 2017: Condition Inspection Using Drone Technology
5. February 12, 2018: Bridge Repair 7th Field Training on Region VIII
6. February 12, 2018: OJT on Special Bridge Routine Maintenance

5.2 JICA Website

(1) Project webpage on ODA Visualization Site
(2) Project website on JICA website
(3) Project News
The news was published 18 times on the Project website

1. April 5, 2016: 1st JCC Meeting
2. June 9, 2016: Sustainability Seminar
3. September 5, 2016: OJT on Routine Maintenance on Special Bridge
4. December 20, 2016: Special Bridge Inspection by Using Drone Technology
5. May 2, 2017: 3rd JCC Meeting
6. October 16, 2017: Field Training on Bridge Repair Pilot Project
7. November 15, 2017: OJT on Pilot Project on Special Bridge Repair in RO-VII
8. December 1, 2017: 2nd Batch of Japan Training
9. December 20, 2017: Japan Invitation for the Observation of Road and Bridge Maintenance Equipment and Facilities
10. January 17, 2018: Inspection on Road Slope Using Drone Technology
11. May 2, 2018: 5th JCC Meeting
12. August 13, 2018: OJT on Pilot Project on Special Bridge Repair in RO-II
13. August 13, 2018: Seminar on Database System
14. August 22, 2018: 6th JCC Meeting
15. January 17, 2019: Special Bridge Inspection by Using Drone Technology and 3D Analysis
16. January 22, 2019: Field Training on Road Slope Pilot Project
17. February 5, 2019: Seminar on Road and Bridge Maintenance
18. February 13, 2019: 7th JCC Meeting

III Result of Joint Review

1 Result of Review based on DAC Evaluation and Criteria

1.1 Outline of Terminal Evaluation

1.1.1 Objectives of the Terminal Evaluation

The objectives of the Terminal Evaluation are:

(1) To examine the degree of achievements, overall effects and strategies of the Project based on the R/D, the PDM, and the PO;

(2) To evaluate the Project in terms of DAC Evaluation Criteria (i.e. Relevance, Effectiveness, Efficiency, Impact and Sustainability);

(3) To make recommendations on necessary arrangements to be made for the sustainable development after the Project completion; and

(4) To compile lessons learnt from the Project which could be utilized for planning and implementation of similar type of projects in the future.

Table 1.1.1-1 DAC Evaluation Criteria

Relevance	Degree of compatibility between the development assistance and priority of policy of the target group, the recipient, and the donor.
Effectiveness	A measure of the extent to which an aid activity attains its objectives.
Efficiency	Efficiency measures the outputs -- qualitative and quantitative – in relation to the inputs. It is an economic term which is used to assess the extent to which aid uses the least costly resources possible in order to achieve the desired results. This generally requires comparing alternative approaches to achieving the same outputs, to see whether the most efficient process has been adopted.
Impact	The positive and negative changes produced by a development intervention, directly or indirectly, intended or unintended. This involves the main impacts and effects resulting from the activity on the local social, economic, environmental and other development indicators.
Sustainability	Sustainability is concerned with measuring whether the benefits of an activity are likely to continue after donor funding has been withdrawn. Projects need to be environmentally as well as financially sustainable.

Sources: New JICA Guidelines for Project Evaluation First Edition, June 2010.

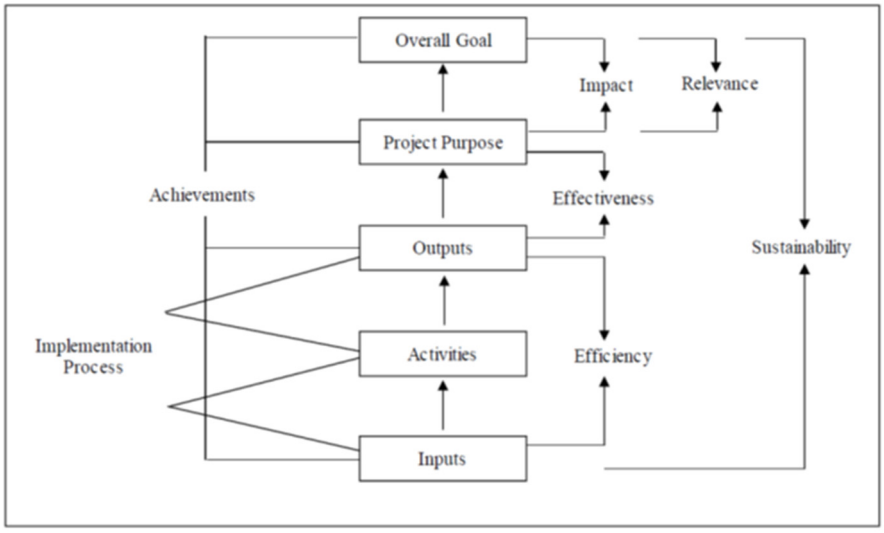


Figure 1.1.1-1 Relationship between the Five Evaluation Criteria and PDM

1.1.2 Method of the Evaluation

The review of the Project was conducted by document review (Monitoring Sheet, Minutes of Meetings, and Pre-post Evaluation Sheet of Seminars etc.), questionnaires and interviews to C/Ps and JICA experts.

Among five criteria, Relevance, Effectiveness and Efficiency were evaluated based on the current situation and achievement at the time of the Project completion. Impact and Sustainability were reviewed based on the current situation, forecast and expectation in the future.

1.2 Evaluation by Five Criteria

1.2.1 Relevance

The relevance of the Project is assessed as "High" for the following points.

(1) Relevance to the Philippine Development Policy

The Philippine Development Plan (2017-2022) sets forth "inclusive growth, a high-trust and resilient society, and a globally competitive knowledge economy" as its development goal for the Philippines. "Accelerating infrastructure development" is included as one of strategies for achieving this goal. To support a higher growth trajectory and improve the quality of life in both urban and rural communities, infrastructure development will remain among the top priorities of the government over the medium term. The Project aiming to improve road and bridge maintenance management to ensure DPWH's quality infrastructure service is in line with policies of Philippine side.

(2) Relevance to Japanese ODA Policy

Japan's Country Assistance Policy for the Philippines (April 2018) lays out three priority areas: i) "strengthening a foundation for sustainable economic growth," ii) "ensuring human security for inclusive growth," and iii) "peace and development in Mindanao." For number i) item, Japan will render its support for the development of high-quality infrastructure such as transportation networks of both metropolitan areas and regional areas, and improvement of administrative capabilities. Thus, the Project is consistent with Japan's ODA policy.

(3) Needs of the Target Group

The target of this project is engineers in all regional offices and their district engineering offices of DPWH.

Through the previous technical cooperation projects from 2007, it was confirmed that capability of central office and 3 pilot ROs/DEOs on road and bridge maintenance management was highly enhanced. However, the capacity enhancement of the DPWH as a whole remained an issue to be realized. The Government of the Republic of the Philippines requested JICA to assist implementing the subsequent project to these projects.

1.2.2 Effectiveness

The effectiveness of the Project is assessed as "Relatively High" for the following points.

(1) Achievement of the Project Purpose

The Project Purpose "Road and bridge maintenance management works of DPWH are improved" has been achieved as described in 2.2 in Chapter II.

All outputs were produced as planned in the field of road maintenance, bridge maintenance, special bridge maintenance, and database system, although there were some behind.

As the target of this project was all engineers in DPWH, the pilot projects of both road slope and bridge repair were conducted more than one each in all regions, and also pilot project of special bridge repair were conducted in pilot regions. The field trainings and OJTs of the pilot project were conducted for the engineers of DEOs by DPWH C/Ps using the manuals/guidelines

which developed/revised in the Project. Through those pilot project, engineers of DPWH were able to learn not only basic maintenance but also the new technologies. At the end of the Project, DPWH has proposed the Sustainability Program to ensure that the self-reliant operation is sustain without the TCP III.

(2) Contribution of Outputs to the Achievement of the Project Purpose

Achievement of Output 1 and Output 2 considered that the institutional capacity of whole DPWH including engineers in ROs and DEOs who were not target in the previous projects were improved. Similarly, the capacity of special bridge maintenance was improved by achieving Output 3. Achievement of Output 4 is also necessary to improve the maintenance management for the future. It can be said that each Output contributed to the strengthening of the institutional capacity of DPWH, namely the Project Purpose.

Capability of DPWH engineers have been enhanced through the Project activities such as preparing/revising the manuals/guidelines, conducting pilot projects, field training and OJTs. Although those activities were supported by JICA experts, most of activities were implemented by C/P with having the initiative who were trained in previous TCP I and II, and also learned technology during Japan trainings.

1.2.3 Efficiency

The efficiency of the Project is assessed as “Relatively High” for the following points.

(1) Appropriateness of Inputs and Activities

Inputs such as project personnel and cost by both the Japanese and Philippine sides have been executed reasonably in general, and the Outputs have been achieved satisfactory at the time of completion of the Project.

- As for the dispatch of experts, the number, expertise and assignment period were appropriate. Activities of the experts were managed by PO and there was no delay in activities by experts.
- Training courses in Japan were conducted three times and total 23 DPWH engineers participated in the courses. Through the participation, they learned new technologies for road and bridge maintenance in Japan. All of Participants kept high motivation, kept good attitude for participation and actively jointed the discussion.
- Training course in the third country was conducted in Cambodia. The participants could observe on-going pilot project on bridge repair which implemented by JICA’s technical cooperation project and joint the seminar as the speaker. It was very effective for “south-south cooperation” for both the Philippines and Cambodia.
- Japan invitation of observation travel for road and bridge maintenance was conducted for innovation of new maintenance technology. JCC member who was in charge of maintenance and controlling equipment, and area managers participated. DPWH procured the new equipment from Japan after this observation travel, and JICA expert supported the field trial of those during the Project.

On the other hand, the followings were confirmed as points to be considered as inhibiting factors.

- Since all of DPWH C/Ps have other assignment of DPWH, they are limited to participate in the Project activities.
- In pilot project on road slope or special bridge repair, there were some cases of delay because of the limitation of the budget, lack of the ability of the contractor, or weather.
- Since martial law in the restive Mindanao region, travel to Mindanao was very limited for Japanese experts. Especially the special bridge repair pilot project in RO-XIII, Butuan city was effected. It was very hard JICA expert to visit the site, they support C/P by meeting in Manila and to send the supporting staff.

1.2.4 Impact

The Impact of the Project is assessed as "Relatively High" for the following points.

(1) Achievement of Overall Goal (Prospect)

Through the activities implemented in the Project, engineers of all regional offices and DEOs of DPWH who participated in the activities could strengthen sufficiently their understanding on road and bridge maintenance management. As for actual technology and methods for road slope stability and bridge repair, they are continuously learning them through the trainings and OJTs which will be conducted by sustainability program, and also through the additional construction projects which are adopted new technologies. Therefore, it is expected that the Overall Goal of the Project, "Conditions of road and bridge administrated by DPWH are improved", can be achieved within 3-5 years after the Project termination.

1.2.5 Sustainability

The Sustainability of the Project is assessed as "High" for the following points.

(1) Policy Aspects

In order to achieve the Philippine development policy "inclusive growth, a high-trust and resilient society, and a globally competitive knowledge economy", it is very important not only construction/winding of the roads, but also protection existing roads and bridges. In order to extend the life of roads and bridges, the routine maintenance and repair, advance protection for the road slope are highly important, and DPWH understand that through the activities from JICA technical cooperation projects since 2007. Thus, it is expected that DPWH will keep the Government's policy support to their activities continuously.

(2) Financial/Organizational Aspects

DPWH proposed the sustainability program for 2 years as described details in 2.2.2 in Chapter II. They requested 54 million pesos for that budget in CY2019-2021. DPWH presented the detail of sustainability program in the 7th JCC and Undersecretary Sadain confirmed its importance and agreed the amount of budget. For conducting sustainability program, the full supports of regional offices are necessary. All regional directors who attended 7th JCC also agreed their support.

(3) Technical Aspects

DPWH proposed two department orders for utilization of the manuals/guidelines which developed/revised in the Project and utilization of Maintenance Information on Road Slope and Bridge Repair (MRIB). In March 2019, those department order was approved and it is expected to utilize in DPWH accordingly.

2 Key Factors Affecting Implementation and Outcomes

The following factors should be considered as key factors affecting implementation and outcomes.

(1) Contributing Factors

- Consistency with the Project and Philippine development needs

As described in 1.2.1, TCP III is well aligned with the development policy and development needs of DPWH. In such circumstances, C/Ps were seriously participated in project activities with sense of ownership, and outputs were produced as planned with clear intension to utilized those in order to improve the condition of roads and bridges in the Philippines.

It also increases the prospect for the achievement of Overall Goal and sustainability of the Project.

- Close communication between JICA experts and C/Ps

During the Project period, 27 times of monthly meetings and 10~20 times of each CWG meetings were conducted for each Output activities. In addition to that, site visits for pilot projects, filed trainings, OJTs, seminars in various ROs and trainings in Japan brought valuable opportunities to communicate each other. Frequent exchange of ideas and discussions between JICA experts and C/Ps facilitated the mutual understanding and technical transfer, and created a good relationship.

- Assignment of C/Ps from TCP-I and TCP-II

Some C/Ps are assigned from previous TCP. It helped smooth continuation of activities and accumulation of knowledge and experience in organization. It is also expected that C/Ps involved in the Project utilize the achievement of the Project after the completion of the project.

(2) Inhibiting Factors

- Delay of implementation of pilot projects

Delay of some pilot project occurred during TCP III because of lack of knowledge of construction in non-pilot ROs and DEOs, bidding failure, lack of the skill of contractor, limited budget, etc. It is important to disseminate effective maintenance method to chief level of engineers in ROs and DEOs to conduct the project properly. In TCP III, the seminar of road and bridge maintenance for chief engineers in ROs and DEOs conducted in January 2019 in each areas in the Philippines.

- Martial Law in Mindanao Area

Since May 2017, Philippine President placed the whole of Mindanao under martial law. The activities in Mindanao area became limited because of this martial law. Especially, the activities for pilot project on special bridge repair of Diosdado Macapagal Bridge in Butuan City was effected. Since JICA experts could not visit Butuan City, they supported activities to have frequent meetings in Manila and send the local engineers for the site training.

- Partial absence of DPWH C/Ps and engineers in meetings/OJTs due to their other assignment in DPWH

Many meetings and other activities were conducted during the Project period. C/Ps were not assigned as full-time staff for TCP III, therefore C/Ps sometimes had difficulties to participate in the Project activities due to other tasks. However, C/Ps managed their time and staff, and participated the Project actively.

3 Lesson Learnt

- Necessity of Ensuring Budget for Project Activities

In JICA technical corporation projects, such case is often observed that implementation of activities was impeded because counterpart agency was not able to ensure budget for the project activities. In contrast, sufficient budgets are timely ensured by DPWH, which has facilitated smooth implementation of the activities. It is mainly because budget are allocated to road and bridge maintenance under the Philippine government and the budget proposal for the Project was prepared and submitted on-time. In order to ensure necessary budgets for project activities, it is required to confirm the system for proposal of budget and schedule at the project planning stage.

- Effectiveness of Technology Transfer through Actual Practice

In the project activities of conducting pilot project, trainings/OJTs, seminars, and developing/revising manuals were conducted by C/Ps themselves with technical assistances from JICA experts. Especially in the pilot projects are directly related to C/Ps regular responsible duties. In case of transferring technology through actual practice of activities, it should be designed in full consideration of C/P’s regular responsible duties.

- Project Monitoring

Monitoring of the Project was conducted using Monitoring Sheet newly introduced for JICA technical cooperation project from 2014. This method was useful for both JICA experts and C/Ps to review the status of outputs, issues to be solved and progress of the project and modify the project outputs and activities if necessary.

IV Achievement of Overall Goals after the Project Completion

1 Prospects to Achieve Overall Goal

Overall Goal and Indicators of the project was set as follows.

(1) Overall Goal

Conditions of roads and bridges administered by DPWH are improved

(2) Objectively Verifiable Indicators

1. Ratio of total length of roads with good/fair conditions to that of all roads administered by DPWH becomes 82% within 3 years after Project completion

2. Ratio of total number of bridges with good/fair conditions to that of all bridges administered by DPWH becomes 95% within 3 years after Project completion

3. 450 construction projects on road slope stability are implemented within 3 years after Project completion.

1.1 Status of Achieving Overall Goal (Prospect)

(1) Indicator 1:

Ratio of total length of roads with good/fair conditions at the end of TCP III in 2018 is 74.16% calculated from the data from Visual Road Condition Data uploaded in the RBIA of DPWH.

Since the percentage of increase from 2016 to 2017 is 4% and from 2017 to 2018 is 3%, DPWH set the target percentage of increase from 2018 as 5% annually. Target ratio shall become 89.16% after 3 years from the project completion.

Year	% of Roads in Good and Fair Condition	% of Roads in Poor, Bad and Not Assessed Condition	Total Length in Km
2016	70.06	29.94	22,959.33
2017	72.59	27.41	23,858.40
2018	74.16	25.84	24,422.10
2019	79.16	20.84	33,663.71
2020	84.16	15.84	34,394.71
2021	89.16	10.84	35,125.71

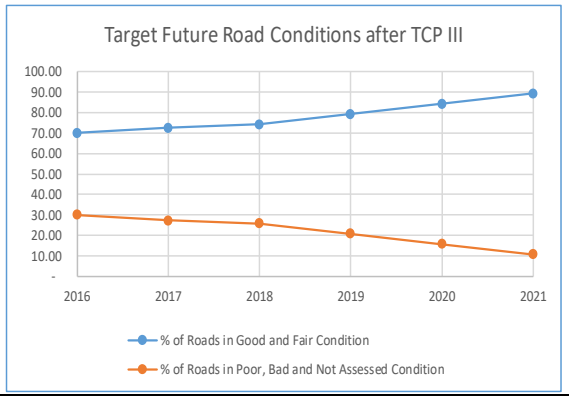


Figure 1.1-1 Road Condition Data from 2016 to 2018 including Projections
Source: Project Team

(2) Indicator 2:

Ratio of total number of bridges with good/fair conditions at the end of TCP III in 2018 is 93.45% calculated from the data from the BMS survey and RBIA generated report of DPWH.

The percentage of increase from 2016 to 2017 and from 2017 to 2018 are both 4%, thus DPWH set the target percentage of increase from 2018 as 2% annually. Target ratio shall become 99.45% after 3 years from the project completion.

Year	% of Bridges in Good and Fair Condition	% of Bridges in Poor, Bad and For Further Assessment Condition	Total No. of Bridges
2016	86.64	13.36	7,071
2017	89.95	10.05	7,430
2018	93.45	6.55	7,793
2019	95.45	4.55	9,070
2020	97.45	2.55	9,801
2021	99.45	0.55	10,532

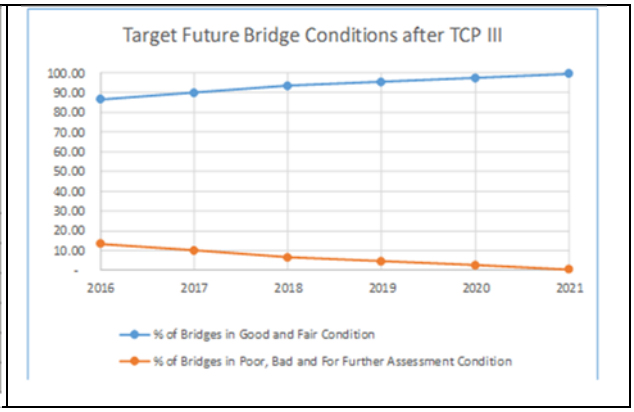


Figure 1.1-2 Bridge Condition Data from 2016 to 2018 including Projections
Source: Project Team

(3) Indicator 3:

In order to achieve 450 construction projects on road slope stability are implemented within 3 years after Project completion, DPWH have to plan more than 9-10 projects by each regions per year. At the budget for General Appropriations Act (GAA) which is allocated to each regions for their construction projects in 2018, 1,420 projects were planned for construction on road slope protection structure in all regions of DPWH. However, those projects are included the construction which is not adopted the technology learned from the Project.

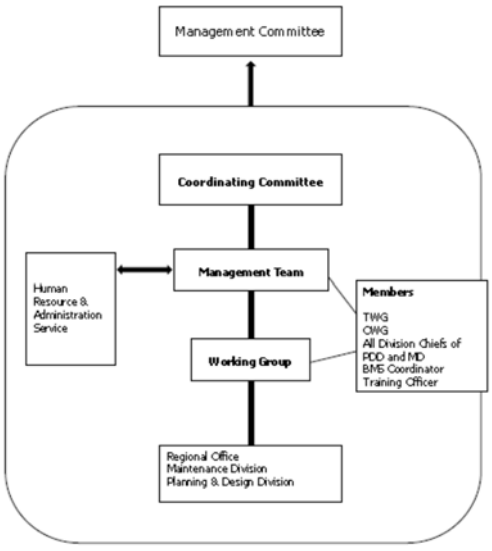
2 Plan of Operation and Implementation Structure of the Philippine Side to Achieve Overall Goal

DPWH has proposed sustainability program to ensure that the self-reliant operation is sustained after the Project. The details of sustainability program is shown in Table 2.2.2-1 in Chapter II.

Sustainability program is planning duration for 2 years from 2019 as its purpose of improvement of capability of DPWH on road and bridge maintenance management, bridge condition/engineering inspection, special bridge condition inspection and special bridge maintenance in the 16 Regional Offices and 183 District Engineering Offices.

Organization will consist Coordinating Committee, Management Team, and Counterpart Working Group. Implementation Structure showed in below chart.

Their proposed total budget for CY 2019 to 2020 is 54.44 million Pesos for all regions and allocation is shown below.



Region	Allocation (Php'000)
CAR	2.24
I	3.78
II	3.51
III	4.31
IV-A	3.14
IV-B	3.81
V	6.27
VI	8.64
VII	2.24
VIII	3.40
IX	2.27
X	2.07
XI	1.11
XII	1.98
XIII	2.98
NCR	2.69
Total	54.44

Figure 2-1 Implementation Structure and Budget of Sustainability Program

3 Recommendations for the Philippine Side

This Project is regarded as the blue print of road and bridge maintenance management in the Philippines. In order to achieve its Overall Goal, DPWH should continue the appropriate road and bridge maintenance practices and technologies from now on: To accomplish this, the following measures should be taken by the Philippine side:

(1) To secure the necessary annual budget and timely implementation of activities

It is expected that DPWH counterparts will implement Sustainability Program from 2019 to 2021 after completion of the Project, but in order to steadily implement the program DPWH should ensure a reliable budget for implementation of the program to organize supporting system, to arrange adequate engineers for the implementation and to carefully prepare for the detailed program.

There are some Pilot Projects which are still on-going mainly due to the delay in procurement, changes in design and late delivery of imported materials.

DPWH Technical/Counterpart Working Group (TWG/CWG) of Sustainability Program shall continue to monitor the progress of the on-going Pilot Projects on Bridge Repair and Road Slope Protection Works until completed to ensure adherence to plans, specifications and methodologies as prescribed in the approved technical manuals.

(2) To continue enhancement of capacity building for DPWH engineers, in particular young engineers.

One of important activities of Sustainability Program is to conduct OJTs and echo training for engineers in DEOs. DPWH should ensure the availability of the TWG/CWG members who are trained as resource speakers for the conduct of OJTs.

(3) To update technology of road and bridge maintenance continuously.

JICA expert team had introduced new technologies for road and bridge maintenance not only through the activities such as pilot projects and seminars, but also in the technical manuals and guidelines which revised/formulated in TCP III. DPWH should disseminate to all regional offices and DEOs.

Another system developed in TCP III is Maintenance Information for Road Slope and Bridge Repair (MIRB). During the project, only pilot regions were conducted OJTs and inputs. DPWH will implement by themselves to conduct OJTs and echo training on database system to other regions and conduct actual gathering/encoding MIRB.

(4) Others

For effective implementation of Sustainability Program, it is necessary to provide full support by the Regional Offices.

Some Regional Offices have incomplete operational/functional as well as existing non-functional Non-Destructive Testing (NDT) Equipment/Apparatus needed in the conduct of proper bridge engineering inspection in accordance with the formulated Technical Manual.

Regional Offices in coordination with the BRS should facilitate the immediate repair/replacement of non-functional NDT Equipment/Apparatus to ensure their availability in time for the conduct of bridge engineering inspection.

Appendix 1 List of Counterparts of DPWH

TCP III TWG and CWG Groupings

As of January 2018

Group	Members	Names
Technical Working Group Total: 10 (2 new)	Proj. Mgr. (BOC)	Aristarco M. Doroy
	Dep. Proj. Mgr. (BOM)	Ma. Visna N. Manio
	Planning Service (PS)	Nenita R. Jimenez
	BOD	Edwin C. Matanguihan
	BOM	Teofila SF Borlongan
	Regional Area Manager CAR	Elsa T. Naboye
	Regional Area Manager RO VII	Rosario C. Calves
	Regional Area Manager XI	Rowena P. Jamito
	Project Coordinator (PS)	Ma. Soledad Q. Balisi
	BQS (New)	Carlos P. Ebora
	BRS (New)	Ezekiel L. Bravo*
CWG -Data Base System (CWG-DBS) Total: 11 (9 new)	IMS (New)	Egan Louis J. Fajardo
	BOM (New)	Pastor G. Padre, Jr.
	BOD (New)	No Member since June 2018
	BOC (New)	Mari Anne B. Valencia
	PS (New)	Justino Jaime T. Surot, Jr. *
	RO VII (-New)	Norberto A. Gailan, Jr.
	RO VII (PDD-New)	Edgardo M. Bascug
	RO VII (QAHD-New)	Madell April C. Aldea
	RO VII (CD-New)	Fraella Marie O. Doroy
	RO XI (MD-New)	Edgardo L. Pioquinto
	CAR (CD-New)	Alfredo D. Bannagao III
CWG - Team for Road Maint./ Road Slope (CWG-RRS) Total: 14 (6 new)	RO XI MD	Rowena P. Jamito
	BOM	Vincent Andrew D. Amores
	CAR MD	Ruth S. Duyo
	RO XI MD	Ma. Ysobel Suzette C. Piatos
	CAR MQCHD	Elsa T. Naboye
	BOM (UPMO)	Ernante S. Antonio
	RO VII MD	Rosario S. Calves
	RO XI MD	Elsa G. Grumo
	RO VIII (MD)	Theresa A. Duero
	PS	Emmanuel A. Adriano (In-Active Promoted)
	BOM (New)	Krezia L. Morales
	BOC (New)	Yvan Paul D. Vicera
	CAR (CD-New)	Alvin Clark M. Dulnuan
	RO VII (PDD-New)	Fraella Marie O. Doroy
CWG - Team for Bridge Repair/Maintenance (CWG-BRM) Total: 15 (6 new)	RO XI MD	Rowena P. Jamito
	PS DPD BMS	Justino Jaime T. Surot, Jr.
	NIR	Feliciano R. Espina (In-Active since start of TCP III)
	CAR MQCHD	Elsa T. Naboye
	BOD	Blesilda C. Ramos
	CAR PDD	Jay Jenner B. Biares (In-Active since start of TCP III)
	RO XIII	Danilo C. Pioquinto
	BOM (New)	Noe M. Bonga
	BOC (New)	Patrick G. Tolentino
	RO III (PDD-New)	John Edel Dimarucot
	BOD - Bridge Division	Renato Rainier M. Vitorio
	CAR (MD-New)	Wilmer T. Takinan
	RO VII (CD-New)	Vincent Montrix O. Calapre
	RO XI (PDD-New)	Greg Matthew D. Yee
	RO XIII (PDD)	Bryan James Pitos
CWG - Team for Use of NDT Equipment (CWG-NDT) Total: 15 (5 new)	RO XI MD	Rowena P. Jamito
	BRS	Nerio A. Anisco
	RO VII MQCHD	Vicente R. Valle, Jr.
	RO VII PDD	Fitzgerald Icamen
	RO VIII PDD	Liberato T. Homeres
	CAR MQCHD	Elsa T. Naboye
	BQS	Bobby S. Fodulla (In-Active since start of TCP III)
	NIR	Feliciano R. Espina (In-Active since start of TCP III)
	PS DPD BMS	Justino Jaime T. Surot, Jr.
	PS	Emmanuel A. Adriano (In-Active Promoted)
	BRS (New)	Rolando M. Lavisto
	BQS (New)	Ariel T. Talavera
	CAR (PDD-New)	Wilmer T. Takinan
	RO VII (CD-New)	Vincent Montrix O. Calapre
	RO XI (PDD-New)	Algin A. gingatan

UPDATED March, 2018

Group	Members	Names
CWG - Team for Special Bridges (CWG-SB) Total: 17 (6 new)	RO XI (MD-Team leader, TWG)	Rowena P. Jamito
	RO II (PDD)	Rhett Willem P. Varilla
	R III (MQCHD)	Violeta T. Liwanag
	RO VII (MD)	Rosario C. Calves
	RO VIII (MQCHD)	Adelina P. Gomez
	CAR (MQCHD)	Elsa T. Naboye
	RO II (PDD)	Bryan Nathaniel Cauilan
	RO III (PDD)	Recy L. Calma
	RO VII (MD)	Fitsgerald R. Icamen(Retired)
	RO XIII (MD)	Ruel M. Nazareno
	RO XIII (QAHD)	Danilo C. Pioquinto
	PS	Justino Jaime T. Surot, Jr.
	RO II (PDD-New)	Bryan Nathaniel Cauilan
	RO III (CD-New)	Kenneth Edward T. Fernando
	RO VII (Cebu 6th DEO, PDS-New)	
	RO VII (Cebu 6th DEO, MS-New)	Nelson B. Comedia
	RO VIII (CD-New)	Limuel B. Elicot
	RO XIII (New)	Irewill D. Flores
Pilot Projects Monitoring Team - Luzon Area Total: 12 (4 new)	BOC (Team leader, TWG member)	Aristarco M. Doroy
	CAR, MQAHD	Elsa T. Naboye
	PS, DPD	Justino Jaime T. Surot, Jr.
	PS, DPD	Emmanuel A. Adriano (In-Active Promoted)
	BOM (UPMO)	Ernante S. Antonio
	CAR MD	Ruth S. Duyo
	RO II (PDD)	Bryan Nathaniel Cauilan
	RO II (PDD)	Rhett Willem P. Varilla
	BOM (New)	Mark Andrew L. Delgado
	CAR (PDD-New)	Wilmer T. Takinan
	RO II (MD-New)	
	RO III (PDD-New)	John Edel Dimarucot
Pilot Projects Monitoring Team - Visayas Area Total: 9 (3 new)	RO VII MD (Team Leader)	Rosario S. Calves
	RO VII (MQCHD)	Vicente R. Valle, Jr.
	RO VII (PDD)	Fraella Marie O. Doroy
	NIR	Feliciano R. Espina (In-Active)
	RO III (PDD)	Recy L. Calma
	RO VIII (MQCHD)	Adelina P. Gomez
	RO VIII (PDD)	Liberato T. Homeres
	RO VII -1 (CD-New)	Vincent Montrix O. Calapre
	RO VIII -1 (MD-New)	Jumar O. Villamor
Pilot Projects Monitoring Team - Mindanao Area Total: 10 (4 new)	RO XI (MD) (Team Leader-TWG)	Rowena P. Jamito
	RO XI (MD)	Elsa G. Grumo
	RO XI (MD)	Ma. Ysobel Suzette C. Piatos
	R III (MQCHD)	Violeta T. Liwanag
	RO XIII (MD)	Ruel M. Nazareno
	RO XI -1 (PDD-New)	Gregg Mathew D. Yee
	RO XI -2 (PDD-New)	Algin A. Gingatan
	RO XI	Ma. Luisa R. Flores
	RO XIII -1 (PDD-New)	Bryan James Pitos
	RO XIII -2 (MD-New)	Irewill D. Flores

Additl. Request of BOM: Crisostomo B. Ferrer Engr. II Alternate

Group	Members	Names
Counterparts from Non-Pilot Regions Additional New (24)	NCR	
	1. (MD-New) for Road Maint. / Road Slope	Maria Kristina S. Tomagan
	2. (PDD-New) Br. Repair, NDT, Inspection, Spl. Bridge	Ariel S. Amor
	RO I	
	1. (MD-New) for Road Maint. / Road Slope	Mark Erik D. Madrigal
	2. (PDD-New) Br. Repair, NDT, Inspection, Spl. Bridge	Dexter L. Cavaneyro
	RO IV-A	
	1. (MD-New) for Road Maint. / Road Slope	Conrad Joseph Perez
	2. (PDD-New) Br. Repair, NDT, Inspection, Spl. Bridge	Jane F. Cruz/Ruel S. Casimiro
	RO IV-B	
	1. (MD-New) for Road Maint. / Road Slope	Mark Jerome C. Limpiado/Oliver P. Mauleon
	2. (PDD-New) Br. Repair, NDT, Inspection, Spl. Bridge	Montrexis T. Tamayo/Calvin D. Cadata
	RO V	
	1. (MD-New) for Road Maint. / Road Slope	Sergio C. Uy/Patrick Daniel B. Salcedo
	2. (PDD-New) Br. Repair, NDT, Inspection, Spl. Bridge	Salvador Marc R. Botin
	RO VI	
	1. (MD-New) for Road Maint. / Road Slope	Victor P. Diomo
	2. (PDD-New) Br. Repair, NDT, Inspection, Spl. Bridge	Jillian Rose D. Atinado/Nester John F. Cagay
	RO IX	
	1. (MD-New) for Road Maint. / Road Slope	Mohammad Riduan L. Natino
	2. (PDD-New) Br. Repair, NDT, Inspection, Spl. Bridge	Jeric Vincent T. Ruiz
	RO X	
	1. (PDD-New) for Road Maint. / Road Slope	Reymark Anthony C. Basco/Vanessa Grace T. Dolloso
	2. (PDD-New) Br. Repair, NDT, Inspection, Spl. Bridge	Rene Charles C. Supremo
	3. (PDD-New) Br. Repair, NDT, Inspection, Spl. Bridge	Jessie R. Tutor
	RO XII	
	1. (PPD-New) for Road Maint. / Road Slope	Deomark A. Hedra
	2. (PDD-New) Br. Repair, NDT, Inspection, Spl. Bridge	Paul Daniel R. Salas/

Additional Counterparts as requested by **RD POL M. DELOS SANTOS** Region XIII

Special Bridge (D. Macapagal Cable Stayed Bridge)	Dexter G. Corpuz-Engr. II Maintenance Division
Bridge Repair & Road Slope	Bernie G. Hilario-Engr. II PDD

Appendix 2 Project Design Matrix

Project Design Matrix Ver. 1 on 31 March 2016

Project Design Matrix Ver. 2 on 27 September 2016

Project Design Matrix Ver. 3 on 20 March 2017

Project Design Matrix Ver. 4 on 10 October 2017

Project Design Matrix Ver. 5 on 03 April 2018

Project Design Matrix Ver. 6 on 26 October 2018

PDM (Project Design Matrix)
Version No. 1
Date：March 31 2016

Project Title: The Project for Improvement of Quality Management for Highway and Bridge Construction and Maintenance, Phase III
Project Period: Feb 2016 ~ Jan 2019 (3 years)
Counterpart Agencies: Central Office and Regional Offices (CAR, II, III, VII, VIII, XI and XIII) of DPWH
Target Groups: Engineers in all 16 Regional Offices and their District Engineering Offices of DPWH

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions	Achievement	Remarks
Overall Goal Conditions of roads and bridges administered by DPWH are improved.	1. Ratio of total length of roads with good/fair conditions to that of all roads administrated by DPWH becomes 82% within 3 years after Project completion. 2. Ratio of total number bridges with good/fair conditions to that of all bridges administrated by DPWH becomes 95% within 3 years after Project completion. 3. 450* construction projects on road slope stability are implemented within 3 years after Project completion. *This is same number to that of planned additional construction projects on road slope stability set as an indicator for Project Purpose.	1. Records of DPWH. 2. Records of DPWH. 3. Records of DPWH, interview with concerned staff of DPWH			
Project Purpose Road and bridge maintenance management works of DPWH are improved.	1. Maintenance management works on roads and bridges (including special bridges) are continued by ROs/DEOs in all Regions with utilizing manuals developed and/or revised by the Project. 2. 34 additional construction projects on road slope stability and/or bridge repair are planned by 17 ROs with utilizing the database system developed by the Project.	1. Monitoring sheets. 2. Monitoring sheets, interview with concerned staff of target ROs.	1. Budgets for implementing maintenance management (including bridge repair and construction for road slope stability) of roads and bridges in all Regions are continued to be ensured. 2. Philippine government policy on road and bridge sector remains consistent.		
Outputs 1. Capability of concerned engineers of all ROs/DEOs on road maintenance management is enhanced.	1-1 Knowledge (level of understanding on manuals) and skills of engineers who participated in seminars/OJTs on road maintenance management are enhanced (60% of those engineers agree that their knowledge and skills on road maintenance management have been enhanced). 1-2 17 planned pilot projects on road slope stability are implemented.	1-1 Records of seminars and OJTs, Interview with some of participating engineers. 1-2 Monitoring sheets.	1. Engineers participating in Project activities continue working in DPWH. 2. Manuals and guidelines developed or revised by the Project are approved by DPWH Central Office.		
2. Capability of concerned engineers of all ROs/DEOs on bridge maintenance management is enhanced.	2-1 Knowledge (level of understanding on manuals) and skills of engineers who participated in seminars/OJTs on bridge maintenance management and bridge inspections are enhanced (60% of those engineers agree that their knowledge and skills on bridge maintenance management and bridge inspections have been enhanced). 2-2 17 planned pilot projects on bridge repair are implemented.	2-1 Records of seminars and OJTs, Interview with some of participating engineers. 2-2 Monitoring sheets.			
3. Capability of concerned engineers of ROs/DEOs in target Regions (II, III, VII, VIII, and XIII) on special bridge maintenance management is enhanced.	3-1 Knowledge (level of understanding on manuals) and skills of engineers who participated in seminars/OJTs on maintenance management and inspections of special bridges are enhanced (60% of those engineers agree that their knowledge and skills on maintenance management and inspections of special bridges have been enhanced). 3-2 4 planned pilot projects on special bridge repair are implemented.	3-1 Records of seminars and OJTs, Interview with some of participating engineers. 3-2 Monitoring sheets.			

4. Database system to be utilized for road and bridge maintenance management is developed.	4-1 Operation of database system on road slope stability works and bridge repairs (including periodic maintenance) is started.	4-1 Monitoring sheets, database system, and interview with concerned DPWH staff.			

Activities	Inputs	
1-1 Assist conducting seminars/OJTs on road maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs. 1-2 Assist implementing pilot projects on road slope stability and relevant OJTs. 1-3 Monitor and evaluate situations of road maintenance management by ROs/DEOs. 1-4 Review manuals on road maintenance management and construction supervision developed and/or revised by the Phase-II and make their necessary revisions.	**Japanese side** 1. Experts - Team Leader/Bridge maintenance management - Road maintenance management - Road slope protection - Bridge repair - Special bridge maintenance management - Special bridge repair (1) - Special bridge repair (2) - Database system - Monitoring and evaluation/Coordinator - Other as necessary 2. C/P trainings in Japan and/or third country Japan Training 3times Third Country Training 1 time 3. Provision of equipment - Tools for OJT - Equipment for database system - Others 4. Local expenses necessary for Project activities	**Philippine side** 1. C/P - Project Manager - Deputy Project Manager - Project Coordinator - Other Counterpart personnel from Central Office and Regional Offices (CAR, II, III, VII, NIR,VIII, XI, and XIII) for TWG and CWG - Supporting staff 2. Suitable office spaces with necessary equipment for the Project implementation at Central Office and Regional Offices (CAR, II, III, VII, XI, and XIII) 3. Project expenses - Implementation of pilot projects - Seminars and workshops - Travel and allowance for participating in Project activities - Others
2-1 Assist conducting seminars/OJTs on bridge maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs. 2-2 Assist conducting seminars/OJTs on bridge engineering inspections by Sustainability Program for concerned engineers of all ROs/DEOs. 2-3 Assist implementing pilot projects on bridge repair and relevant OJTs. 2-4 Monitor and evaluate situations of bridge maintenance and engineering inspections by ROs/DEOs. 2-5 Review manuals on bridge maintenance management and construction supervision developed and/or revised by the Phase-II and make their necessary revisions.		
3-1 Develop special bridge maintenance and management manual. 3-2 Conduct seminars/OJTs on special bridge maintenance management for concerned engineers of target ROs/DEOs. 3-3 Assist conducting seminars/OJTs on special bridge inspections by Sustainability Program for concerned engineers of target ROs/DEOs (conduct OJT for RO-VIII). 3-4 Assist implementing pilot projects on special bridge repair and relevant OJTs. 3-5 Monitor and evaluate situations of special bridge inspections by ROs/DEOs. 3-6 Review special bridge inspection manuals developed by the Phase-II and make their necessary revisions.		
4-1 Review current filing situation of documents/data related to road and bridge maintenance management and identify issues to be improved. 4-2 Prepare the basic plan (framework, necessary entry data, operation manner, selection of model RO, etc.) for developing the database system. 4-3 Develop the database system based on the basic plan. 4-4 Enter necessary data and make trial operations of the system at model RO. 4-5 Improve the system in consideration of the results of trial operations at model RO. 4-6 Prepare relevant manuals including operation manner. 4-7 Conduct seminars on the database system and its relevant manuals.		

1. Participation of C/Ps and other concerned engineers in Project activities is ensured.

Pre-condition

1. Philippine government allocates budget for the Project (implementing Sustainability Program) without any major delay.

PDM (Project Design Matrix)
Version No. 2
Date：September 27 2016

Project Title: The Project for Improvement of Quality Management for Highway and Bridge Construction and Maintenance, Phase III
Project Period: Feb 2016 ~ Jan 2019 (3 years)
Counterpart Agencies: Central Office and Regional Offices (CAR, II, III, VII, VIII, XI and XIII) of DPWH
Target Groups: Engineers in all 16 Regional Offices and their District Engineering Offices of DPWH

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions	Achievement	Remarks
Overall Goal Conditions of roads and bridges administered by DPWH are improved.	1. Ratio of total length of roads with good/fair conditions to that of all roads administrated by DPWH becomes 82% within 3 years after Project completion. 2. Ratio of total number bridges with good/fair conditions to that of all bridges administrated by DPWH becomes 95% within 3 years after Project completion. 3. 450* construction projects on road slope stability are implemented within 3 years after Project completion. *This is same number to that of planned additional construction projects on road slope stability set as an indicator for Project Purpose.	1. Records of DPWH. 2. Records of DPWH. 3. Records of DPWH, interview with concerned staff of DPWH			
Project Purpose Road and bridge maintenance management works of DPWH are improved.	1. Maintenance management works on roads and bridges (including special bridges) are continued by ROs/DEOs in all Regions with utilizing manuals developed and/or revised by the Project. 2. 34 additional construction projects on road slope stability and/or bridge repair are planned by 17 ROs with utilizing the database system developed by the Project.	1. Monitoring sheets. 2. Monitoring sheets, interview with concerned staff of target ROs.	1. Budgets for implementing maintenance management (including bridge repair and construction for road slope stability) of roads and bridges in all Regions are continued to be ensured. 2. Philippine government policy on road and bridge sector remains consistent.		
Outputs 1. Capability of concerned engineers of all ROs/DEOs on road maintenance management is enhanced.	1-1 Knowledge (level of understanding on manuals) and skills of engineers who participated in seminars/OJTs on road maintenance management are enhanced (60% of those engineers agree that their knowledge and skills on road maintenance management have been enhanced). 1-2 17 planned pilot projects on road slope stability are implemented.	1-1 Records of seminars and OJTs, Interview with some of participating engineers. 1-2 Monitoring sheets.	1. Engineers participating in Project activities continue working in DPWH. 2. Manuals and guidelines developed or revised by the Project are approved by DPWH Central Office.		
2. Capability of concerned engineers of all ROs/DEOs on bridge maintenance management is enhanced.	2-1 Knowledge (level of understanding on manuals) and skills of engineers who participated in seminars/OJTs on bridge maintenance management and bridge inspections are enhanced (60% of those engineers agree that their knowledge and skills on bridge maintenance management and bridge inspections have been enhanced). 2-2 17 planned pilot projects on bridge repair are implemented.	2-1 Records of seminars and OJTs, Interview with some of participating engineers. 2-2 Monitoring sheets.			
3. Capability of concerned engineers of ROs/DEOs in target Regions (II, III, VII, VIII, and XIII) on special bridge maintenance management is enhanced.	3-1 Knowledge (level of understanding on manuals) and skills of engineers who participated in seminars/OJTs on maintenance management and inspections of special bridges are enhanced (60% of those engineers agree that their knowledge and skills on maintenance management and inspections of special bridges have been enhanced). 3-2 4 planned pilot projects on special bridge repair are implemented.	3-1 Records of seminars and OJTs, Interview with some of participating engineers. 3-2 Monitoring sheets.			

4. Database system to be utilized for road and bridge maintenance management is developed.	4-1 Operation of database system on road slope stability works and bridge repairs (including periodic maintenance) is started.	4-1 Monitoring sheets, database system, and interview with concerned DPWH staff.			

Activities	Inputs	
1-1 Assist conducting seminars/OJTs on road maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs. Recommended List of Equipment/Tools for road maintenance. 1-2 Assist implementing pilot projects on road slope stability and relevant OJTs. 1-3 Monitor and evaluate situations of road maintenance management by ROs/DEOs. 1-4 Review manuals on road maintenance management and construction supervision developed and/or revised by the Phase-II and make their necessary revisions.	**Japanese side** 1. Experts - Team Leader/Bridge maintenance management - Road maintenance management - Road slope protection - Bridge repair - Special bridge maintenance management - Special bridge repair (1) - Special bridge repair (2) - Database system - Monitoring and evaluation/Coordinator - Other as necessary 2. C/P trainings in Japan and/or third country Japan Training 3times Third Country Training 1 time 3. Provision of equipment - Tools for OJT - Equipment for database system - Others 4. Local expenses necessary for Project activities	**Philippine side** 1. C/P - Project Manager - Deputy Project Manager - Project Coordinator - Other Counterpart personnel from Central Office and Regional Offices (CAR, II, III, VII, NIR,VIII, XI, and XIII) for TWG and CWG - Supporting staff - Counterpart personnel from Non-Pilot Regional Offices (I, IV-A, IV-B, V, VI, IX, X and XII) 2. Suitable office spaces with necessary equipment for the Project implementation at Central Office and Regional Offices (CAR, II, III, VII, XI, and XIII) 3. Project expenses - Implementation of pilot projects - Seminars and workshops - Travel and allowance for participating in Project activities - Others
2-1 Assist conducting seminars/OJTs on bridge maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs. Recommended List of Equipment/Tools for road maintenance. 2-2 Assist conducting seminars/OJTs on bridge engineering inspections by Sustainability Program for concerned engineers of all ROs/DEOs. Bridge Condition Data Review and Bridge Engineering Inspection. 2-3 Assist implementing pilot projects on bridge repair and relevant OJTs. 2-4 Monitor and evaluate situations of bridge maintenance and engineering inspections by ROs/DEOs. 2-5 Review manuals on bridge maintenance management and construction supervision developed and/or revised by the Phase-II and make their necessary revisions.		
3-1 Develop special bridge maintenance and management manual. 3-2 Conduct seminars/OJTs on special bridge maintenance management for concerned engineers of target ROs/DEOs. 3-3 Assist conducting seminars/OJTs on special bridge inspections by Sustainability Program for concerned engineers of target ROs/DEOs (conduct OJT for RO-VIII). 3-4 Assist implementing pilot projects on special bridge repair and relevant OJTs. 3-5 Monitor and evaluate situations of special bridge inspections by ROs/DEOs. 3-6 Review special bridge inspection manuals developed by the Phase-II and make their necessary revisions.		
4-1 Review current filing situation of documents/data related to road and bridge maintenance management and identify issues to be improved. 4-2 Prepare the basic plan (framework, necessary entry data, operation manner, selection of model RO, etc.) for developing the database system. 4-3 Develop the database system based on the basic plan. 4-4 Enter necessary data and make trial operations of the system at model RO. 4-5 Improve the system in consideration of the results of trial operations at model RO. 4-6 Prepare relevant manuals including operation manner. 4-7 Conduct seminars on the database system and its relevant manuals.		

1. Participation of C/Ps and other concerned engineers in Project activities is ensured.

Pre-condition

1. Philippine government allocates budget for the Project (implementing Sustainability Program) without any major delay.

PDM (Project Design Matrix)
Version No. 3
Date：March 30 2017

Project Title: The Project for Improvement of Quality Management for Highway and Bridge Construction and Maintenance, Phase III
Project Period: Feb 2016 ~ Jan 2019 (3 years)
Counterpart Agencies: Central Office and Regional Offices (CAR, II, III, VII, VIII, XI and XIII) of DPWH
Target Groups: Engineers in all 16 Regional Offices and their District Engineering Offices of DPWH

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions	Achievement	Remarks
Overall Goal Conditions of roads and bridges administered by DPWH are improved.	1. Ratio of total length of roads with good/fair conditions to that of all roads administrated by DPWH becomes 82% within 3 years after Project completion. 2. Ratio of total number bridges with good/fair conditions to that of all bridges administrated by DPWH becomes 95% within 3 years after Project completion. 3. 450* construction projects on road slope stability are implemented within 3 years after Project completion. *This is same number to that of planned additional construction projects on road slope stability set as an indicator for Project Purpose.	1. Records of DPWH. 2. Records of DPWH. 3. Records of DPWH, interview with concerned staff of DPWH			
Project Purpose Road and bridge maintenance management works of DPWH are improved.	1. Maintenance management works on roads and bridges (including special bridges) are continued by ROs/DEOs in all Regions with utilizing manuals developed and/or revised by the Project. 2. 34 additional construction projects on road slope stability and/or bridge repair are planned by 17 ROs with utilizing the database system developed by the Project.	1. Monitoring sheets. 2. Monitoring sheets, interview with concerned staff of target ROs.	1. Budgets for implementing maintenance management (including bridge repair and construction for road slope stability) of roads and bridges in all Regions are continued to be ensured. 2. Philippine government policy on road and bridge sector remains consistent.		
Outputs 1. Capability of concerned engineers of all ROs/DEOs on road maintenance management is enhanced.	1-1 Knowledge (level of understanding on manuals) and skills of engineers who participated in seminars/OJTs on road maintenance management are enhanced (60% of those engineers agree that their knowledge and skills on road maintenance management have been enhanced). 1-2 17 planned pilot projects on road slope stability are implemented.	1-1 Records of seminars and OJTs, Interview with some of participating engineers. 1-2 Monitoring sheets.	1. Engineers participating in Project activities continue working in DPWH. 2. Manuals and guidelines developed or revised by the Project are approved by DPWH Central Office.		
2. Capability of concerned engineers of all ROs/DEOs on bridge maintenance management is enhanced.	2-1 Knowledge (level of understanding on manuals) and skills of engineers who participated in seminars/OJTs on bridge maintenance management and bridge inspections are enhanced (60% of those engineers agree that their knowledge and skills on bridge maintenance management and bridge inspections have been enhanced). 2-2 17 planned pilot projects on bridge repair are implemented.	2-1 Records of seminars and OJTs, Interview with some of participating engineers. 2-2 Monitoring sheets.			
3. Capability of concerned engineers of ROs/DEOs in target Regions (II, III, VII, VIII, and XIII) on special bridge maintenance management is enhanced.	3-1 Knowledge (level of understanding on manuals) and skills of engineers who participated in seminars/OJTs on maintenance management and inspections of special bridges are enhanced (60% of those engineers agree that their knowledge and skills on maintenance management and inspections of special bridges have been enhanced). 3-2 4 planned pilot projects on special bridge repair are implemented.	3-1 Records of seminars and OJTs, Interview with some of participating engineers. 3-2 Monitoring sheets.			

4. Database system to be utilized for road and bridge maintenance management is developed.	4-1 Operation of database system on road slope stability works and bridge repairs (including periodic maintenance) is started.	4-1 Monitoring sheets, database system, and interview with concerned DPWH staff.			

Activities	Inputs	
1-1 Assist conducting seminars/OJTs on road maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs. Recommended List of Equipment/Tools for road maintenance. 1-2 Assist implementing pilot projects on road slope stability and relevant OJTs. 1-3 Monitor and evaluate situations of road maintenance management by ROs/DEOs. 1-4 Review manuals on road maintenance management and construction supervision developed and/or revised by the Phase-II and make their necessary revisions.	**Japanese side** 1. Experts - Team Leader/Bridge maintenance management - Road maintenance management - Road slope protection - Bridge repair - Special bridge maintenance management - Special bridge repair (1) - Special bridge repair (2) - Database system - Monitoring and evaluation/Coordinator - Other as necessary 2. C/P trainings in Japan and/or third country Japan Training 3times Third Country Training 1 time 3. Provision of equipment - Tools for OJT - Equipment for database system - Others 4. Local expenses necessary for Project activities	**Philippine side** 1. C/P - Project Manager - Deputy Project Manager - Project Coordinator - Other Counterpart personnel from Central Office and Regional Offices (CAR, II, III, VII, NIR,VIII, XI, and XIII) for TWG and CWG - Supporting staff - Counterpart personnel from Non-Pilot Regional Offices (NCR, I, IV-A, IV-B, V, VI, IX, X and XII) 2. Suitable office spaces with necessary equipment for the Project implementation at Central Office and Regional Offices (CAR, II, III, VII, XI, and XIII) 3. Project expenses - Implementation of pilot projects - Seminars and workshops - Travel and allowance for participating in Project activities - Others
2-1 Assist conducting seminars/OJTs on bridge maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs. Recommended List of Equipment/Tools for road maintenance. 2-2 Assist conducting seminars/OJTs on bridge engineering inspections by Sustainability Program for concerned engineers of all ROs/DEOs. Bridge Condition Data Review and Bridge Engineering Inspection. 2-3 Assist implementing pilot projects on bridge repair and relevant OJTs. 2-4 Monitor and evaluate situations of bridge maintenance and engineering inspections by ROs/DEOs. 2-5 Review manuals on bridge maintenance management and construction supervision developed and/or revised by the Phase-II and make their necessary revisions.		
3-1 Develop special bridge maintenance and management manual. 3-2 Conduct seminars/OJTs on special bridge maintenance management for concerned engineers of target ROs/DEOs. 3-3 Assist conducting seminars/OJTs on special bridge inspections by Sustainability Program for concerned engineers of target ROs/DEOs (conduct OJT for RO-VIII). 3-4 Assist implementing pilot projects on special bridge repair and relevant OJTs. 3-5 Monitor and evaluate situations of special bridge inspections by ROs/DEOs. 3-6 Review special bridge inspection manuals developed by the Phase-II and make their necessary revisions.		
4-1 Review current filing situation of documents/data related to road and bridge maintenance management and identify issues to be improved. 4-2 Prepare the basic plan (framework, necessary entry data, operation manner, selection of model RO, etc.) for developing the database system. 4-3 Develop the database system based on the basic plan. 4-4 Enter necessary data and make trial operations of the system at model RO. 4-5 Improve the system in consideration of the results of trial operations at model RO. 4-6 Prepare relevant manuals including operation manner. 4-7 Conduct seminars on the database system and its relevant manuals.		

1. Participation of C/Ps and other concerned engineers in Project activities is ensured.

Pre-condition

1. Philippine government allocates budget for the Project (implementing Sustainability Program) without any major delay.

PDM (Project Design Matrix)
Version No. 4
Date：October 10 2017

Project Title: The Project for Improvement of Quality Management for Highway and Bridge Construction and Maintenance, Phase III
Project Period: Feb 2016 ~ Jan 2019 (3 years)
Counterpart Agencies: Central Office and Regional Offices (CAR, II, III, VII, VIII, XI and XIII) of DPWH
Target Groups: Engineers in all 16 Regional Offices and their District Engineering Offices of DPWH

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions	Achievement	Remarks
Overall Goal Conditions of roads and bridges administered by DPWH are improved.	1. Ratio of total length of roads with good/fair conditions to that of all roads administrated by DPWH becomes 82% within 3 years after Project completion. 2. Ratio of total number bridges with good/fair conditions to that of all bridges administrated by DPWH becomes 95% within 3 years after Project completion. 3. 450* construction projects on road slope stability are implemented within 3 years after Project completion. *This is same number to that of planned additional construction projects on road slope stability set as an indicator for Project Purpose.	1. Records of DPWH. 2. Records of DPWH. 3. Records of DPWH, interview with concerned staff of DPWH			
Project Purpose Road and bridge maintenance management works of DPWH are improved.	1. Maintenance management works on roads and bridges (including special bridges) are continued by ROs/DEOs in all Regions with utilizing manuals developed and/or revised by the Project. 2. 34 additional construction projects on road slope stability and/or bridge repair are planned by 17 ROs with utilizing the database system developed by the Project.	1. Monitoring sheets. 2. Monitoring sheets, interview with concerned staff of target ROs.	1. Budgets for implementing maintenance management (including bridge repair and construction for road slope stability) of roads and bridges in all Regions are continued to be ensured. 2. Philippine government policy on road and bridge sector remains consistent.		
Outputs 1. Capability of concerned engineers of all ROs/DEOs on road maintenance management is enhanced.	1-1 Knowledge (level of understanding on manuals) and skills of engineers who participated in seminars/OJTs on road maintenance management are enhanced (60% of those engineers agree that their knowledge and skills on road maintenance management have been enhanced). 1-2 17 planned pilot projects on road slope stability are implemented.	1-1 Records of seminars and OJTs, Interview with some of participating engineers. 1-2 Monitoring sheets.	1. Engineers participating in Project activities continue working in DPWH. 2. Manuals and guidelines developed or revised by the Project are approved by DPWH Central Office.		
2. Capability of concerned engineers of all ROs/DEOs on bridge maintenance management is enhanced.	2-1 Knowledge (level of understanding on manuals) and skills of engineers who participated in seminars/OJTs on bridge maintenance management and bridge inspections are enhanced (60% of those engineers agree that their knowledge and skills on bridge maintenance management and bridge inspections have been enhanced). 2-2 17 planned pilot projects on bridge repair are implemented.	2-1 Records of seminars and OJTs, Interview with some of participating engineers. 2-2 Monitoring sheets.			
3. Capability of concerned engineers of ROs/DEOs in target Regions (II, III, VII, VIII, and XIII) on special bridge maintenance management is enhanced.	3-1 Knowledge (level of understanding on manuals) and skills of engineers who participated in seminars/OJTs on maintenance management and inspections of special bridges are enhanced (60% of those engineers agree that their knowledge and skills on maintenance management and inspections of special bridges have been enhanced). 3-2 4 planned pilot projects on special bridge repair are implemented.	3-1 Records of seminars and OJTs, Interview with some of participating engineers. 3-2 Monitoring sheets.			

4. Database system to be utilized for road and bridge maintenance management is developed.	4-1 Operation of database system on road slope stability works and bridge repairs (including periodic maintenance) is started.	4-1 Monitoring sheets, database system, and interview with concerned DPWH staff.			

Activities	Inputs	
1-1 Assist conducting seminars/OJTs on road maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs. Recommended List of Equipment/Tools for road maintenance. 1-2 Assist implementing pilot projects on road slope stability and relevant OJTs. Conduct condition inspection of road slope protection in CAR using drone technology. 1-3 Monitor and evaluate situations of road maintenance management by ROs/DEOs. 1-4 Review manuals on road maintenance management and construction supervision developed and/or revised by the Phase-II and make their necessary revisions.	**Japanese side** 1. Experts - Team Leader/Bridge maintenance management - Road maintenance management - Road slope protection - Bridge repair - Special bridge maintenance management - Special bridge repair (1) - Special bridge repair (2) - Database system - Monitoring and evaluation/Coordinator - Other as necessary 2. C/P trainings in Japan and/or third country Japan Training 3times Third Country Training 1 time 3. Provision of equipment - Tools for OJT - Equipment for database system - Others 4. Local expenses necessary for Project activities 5. Video recording of Project activities 6. Invitation to Observation Trip for the Road & Bridge Maintenance in Japan	**Philippine side** 1. C/P - Project Manager - Deputy Project Manager - Project Coordinator - Other Counterpart personnel from Central Office and Regional Offices (CAR, II, III, VII, NIR,VIII, XI, and XIII) for TWG and CWG - Supporting staff - Counterpart personnel from Non-Pilot Regional Offices (NCR, I, IV-A, IV-B, V, VI, IX, X and XII) 2. Suitable office spaces with necessary equipment for the Project implementation at Central Office and Regional Offices (CAR, II, III, VII, XI, and XIII) 3. Project expenses - Implementation of pilot projects - Seminars and workshops - Travel and allowance for participating in Project activities - Others
2-1 Assist conducting seminars/OJTs on bridge maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs. Recommended List of Equipment/Tools for road maintenance. 2-2 Assist conducting seminars/OJTs on bridge engineering inspections by Sustainability Program for concerned engineers of all ROs/DEOs. Bridge Condition Data Review and Bridge Engineering Inspection. 2-3 Assist implementing pilot projects on bridge repair and relevant OJTs. 2-4 Monitor and evaluate situations of bridge maintenance and engineering inspections by ROs/DEOs. 2-5 Review manuals on bridge maintenance management and construction supervision developed and/or revised by the Phase-II and make their necessary revisions.		
3-1 Develop special bridge maintenance and management manual. 3-2 Conduct seminars/OJTs on special bridge maintenance management for concerned engineers of target ROs/DEOs. 3-3 Assist conducting seminars/OJTs on special bridge inspections by Sustainability Program for concerned engineers of target ROs/DEOs (conduct OJT for RO-VIII). Conduct condition inspection of special bridges in RO-II and RO-XIII using drone technology 3-4 Assist implementing pilot projects on special bridge repair and relevant OJTs. 3-5 Monitor and evaluate situations of special bridge inspections by ROs/DEOs. 3-6 Review special bridge inspection manuals developed by the Phase-II and make their necessary revisions.		
4-1 Review current filing situation of documents/data related to road and bridge maintenance management and identify issues to be improved. 4-2 Prepare the basic plan (framework, necessary entry data, operation manner, selection of model RO, etc.) for developing the database system. 4-3 Develop the database system based on the basic plan. 4-4 Enter necessary data and make trial operations of the system at model RO. 4-5 Improve the system in consideration of the results of trial operations at model RO. 4-6 Prepare relevant manuals including operation manner. 4-7 Conduct seminars on the database system and its relevant manuals.		

1. Participation of C/Ps and other concerned engineers in Project activities is ensured.

Pre-condition

1. Philippine government allocates budget for the Project (implementing Sustainability Program) without any major delay.

PDM (Project Design Matrix)
Version No. 5
Date：April 3 2018

Project Title: The Project for Improvement of Quality Management for Highway and Bridge Construction and Maintenance, Phase III
Project Period: Feb 2016 ~ Jan 2019 (3 years)
Counterpart Agencies: Central Office and Regional Offices (CAR, II, III, VII, VIII, XI and XIII) of DPWH
Target Groups: Engineers in all 16 Regional Offices and their District Engineering Offices of DPWH

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions	Achievement	Remarks
Overall Goal Conditions of roads and bridges administered by DPWH are improved.	1. Ratio of total length of roads with good/fair conditions to that of all roads administrated by DPWH becomes 82% within 3 years after Project completion. 2. Ratio of total number bridges with good/fair conditions to that of all bridges administrated by DPWH becomes 95% within 3 years after Project completion. 3. 450* construction projects on road slope stability are implemented within 3 years after Project completion. *This is same number to that of planned additional construction projects on road slope stability set as an indicator for Project Purpose.	1. Records of DPWH. 2. Records of DPWH. 3. Records of DPWH, interview with concerned staff of DPWH			
Project Purpose Road and bridge maintenance management works of DPWH are improved.	1. Maintenance management works on roads and bridges (including special bridges) are continued by ROs/DEOs in all Regions with utilizing manuals developed and/or revised by the Project. 2. 34 additional construction projects on road slope stability and/or bridge repair are planned by 17 ROs with utilizing the database system developed by the Project.	1. Monitoring sheets. 2. Monitoring sheets, interview with concerned staff of target ROs.	1. Budgets for implementing maintenance management (including bridge repair and construction for road slope stability) of roads and bridges in all Regions are continued to be ensured. 2. Philippine government policy on road and bridge sector remains consistent.		
Outputs 1. Capability of concerned engineers of all ROs/DEOs on road maintenance management is enhanced.	1-1 Knowledge (level of understanding on manuals) and skills of engineers who participated in seminars/OJTs on road maintenance management are enhanced (60% of those engineers agree that their knowledge and skills on road maintenance management have been enhanced). 1-2 17 planned pilot projects on road slope stability are implemented.	1-1 Records of seminars and OJTs, Interview with some of participating engineers. 1-2 Monitoring sheets.	1. Engineers participating in Project activities continue working in DPWH. 2. Manuals and guidelines developed or revised by the Project are approved by DPWH Central Office.		
2. Capability of concerned engineers of all ROs/DEOs on bridge maintenance management is enhanced.	2-1 Knowledge (level of understanding on manuals) and skills of engineers who participated in seminars/OJTs on bridge maintenance management and bridge inspections are enhanced (60% of those engineers agree that their knowledge and skills on bridge maintenance management and bridge inspections have been enhanced). 2-2 17 planned pilot projects on bridge repair are implemented.	2-1 Records of seminars and OJTs, Interview with some of participating engineers. 2-2 Monitoring sheets.			
3. Capability of concerned engineers of ROs/DEOs in target Regions (II, III, VII, VIII, and XIII) on special bridge maintenance management is enhanced.	3-1 Knowledge (level of understanding on manuals) and skills of engineers who participated in seminars/OJTs on maintenance management and inspections of special bridges are enhanced (60% of those engineers agree that their knowledge and skills on maintenance management and inspections of special bridges have been enhanced). 3-2 4 planned pilot projects on special bridge repair are implemented.	3-1 Records of seminars and OJTs, Interview with some of participating engineers. 3-2 Monitoring sheets.			

4. Database system to be utilized for road and bridge maintenance management is developed.	4-1 Operation of database system on road slope stability works and bridge repairs (including periodic maintenance) is started.	4-1 Monitoring sheets, database system, and interview with concerned DPWH staff.			

Activities	Inputs	
1-1 Assist conducting seminars/OJTs on road maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs. Recommended List of Equipment/Tools for road maintenance. 1-2 Assist implementing pilot projects on road slope stability and relevant OJTs. Conduct condition inspection of road slope protection in CAR using drone technology. 1-3 Monitor and evaluate situations of road maintenance management by ROs/DEOs. 1-4 Review manuals on road maintenance management and construction supervision developed and/or revised by the Phase-II and make their necessary revisions.	**Japanese side** 1. Experts - Team Leader/Bridge maintenance management - Road maintenance management - Road slope protection - Bridge repair - Special bridge maintenance management - Special bridge repair (1) - Special bridge repair (2) - Database system - Monitoring and evaluation/Coordinator - Other as necessary 2. C/P trainings in Japan and/or third country Japan Training 3times Third Country Training 1 time 3. Provision of equipment - Tools for OJT - Equipment for database system - Others 4. Local expenses necessary for Project activities 5. Video recording of Project activities 6. Invitation to Observation Trip for the Road & Bridge Maintenance in Japan	**Philippine side** 1. C/P - Project Manager - Deputy Project Manager - Project Coordinator - Other Counterpart personnel from Central Office and Regional Offices (CAR, II, III, VII, NIR,VIII, XI, and XIII) for TWG and CWG - Supporting staff - Counterpart personnel from Non-Pilot Regional Offices (NCR, I, IV-A, IV-B, V, VI, IX, X and XII) 2. Suitable office spaces with necessary equipment for the Project implementation at Central Office and Regional Offices (CAR, II, III, VII, XI, and XIII) 3. Project expenses - Implementation of pilot projects - Seminars and workshops - Travel and allowance for participating in Project activities - Others
2-1 Assist conducting seminars/OJTs on bridge maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs. Recommended List of Equipment/Tools for road maintenance. 2-2 Assist conducting seminars/OJTs on bridge engineering inspections by Sustainability Program for concerned engineers of all ROs/DEOs. Bridge Condition Data Review and Bridge Engineering Inspection. 2-3 Assist implementing pilot projects on bridge repair and relevant OJTs. 2-4 Monitor and evaluate situations of bridge maintenance and engineering inspections by ROs/DEOs. 2-5 Review manuals on bridge maintenance management and construction supervision developed and/or revised by the Phase-II and make their necessary revisions.		
3-1 Develop special bridge maintenance and management manual. 3-2 Conduct seminars/OJTs on special bridge maintenance management for concerned engineers of target ROs/DEOs. 3-3 Assist conducting seminars/OJTs on special bridge inspections by Sustainability Program for concerned engineers of target ROs/DEOs (conduct OJT for RO-VIII). Conduct condition inspection of special bridges in RO-II and RO-XIII using drone technology 3-4 Assist implementing pilot projects on special bridge repair and relevant OJTs. 3-5 Monitor and evaluate situations of special bridge inspections by ROs/DEOs. 3-6 Review special bridge inspection manuals developed by the Phase-II and make their necessary revisions.		
4-1 Review current filing situation of documents/data related to road and bridge maintenance management and identify issues to be improved. 4-2 Prepare the basic plan (framework, necessary entry data, operation manner, selection of model RO, etc.) for developing the database system. 4-3 Develop the database system based on the basic plan. 4-4 Enter necessary data and make trial operations of the system at model RO. 4-5 Improve the system in consideration of the results of trial operations at model RO. 4-6 Prepare relevant manuals including operation manner. 4-7 Conduct seminars on the database system and its relevant manuals.		

1. Participation of C/Ps and other concerned engineers in Project activities is ensured.

Pre-condition

1. Philippine government allocates budget for the Project (implementing Sustainability Program) without any major delay.

PDM (Project Design Matrix)
Version No. 6
Date：October 26 2018

Project Title: The Project for Improvement of Quality Management for Highway and Bridge Construction and Maintenance, Phase III
Project Period: Feb 2016 ~ Jan 2019 (3 years)
Counterpart Agencies: Central Office and Regional Offices (CAR, II, III, VII, VIII, XI and XIII) of DPWH
Target Groups: Engineers in all 16 Regional Offices and their District Engineering Offices of DPWH

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions	Achievement	Remarks
Overall Goal Conditions of roads and bridges administered by DPWH are improved.	1. Ratio of total length of roads with good/fair conditions to that of all roads administrated by DPWH becomes 82% within 3 years after Project completion. 2. Ratio of total number bridges with good/fair conditions to that of all bridges administrated by DPWH becomes 95% within 3 years after Project completion. 3. 450* construction projects on road slope stability are implemented within 3 years after Project completion. *This is same number to that of planned additional construction projects on road slope stability set as an indicator for Project Purpose.	1. Records of DPWH. 2. Records of DPWH. 3. Records of DPWH, interview with concerned staff of DPWH			
Project Purpose Road and bridge maintenance management works of DPWH are improved.	1. Maintenance management works on roads and bridges (including special bridges) are continued by ROs/DEOs in all Regions with utilizing manuals developed and/or revised by the Project. 2. 34 additional construction projects on road slope stability and/or bridge repair are planned by 17 ROs with utilizing the database system developed by the Project.	1. Monitoring sheets. 2. Monitoring sheets, interview with concerned staff of target ROs.	1. Budgets for implementing maintenance management (including bridge repair and construction for road slope stability) of roads and bridges in all Regions are continued to be ensured. 2. Philippine government policy on road and bridge sector remains consistent.		
Outputs 1. Capability of concerned engineers of all ROs/DEOs on road maintenance management is enhanced.	1-1 Knowledge (level of understanding on manuals) and skills of engineers who participated in seminars/OJTs on road maintenance management are enhanced (60% of those engineers agree that their knowledge and skills on road maintenance management have been enhanced). 1-2 17 planned pilot projects on road slope stability are implemented.	1-1 Records of seminars and OJTs, Interview with some of participating engineers. 1-2 Monitoring sheets.	1. Engineers participating in Project activities continue working in DPWH. 2. Manuals and guidelines developed or revised by the Project are approved by DPWH Central Office.		
2. Capability of concerned engineers of all ROs/DEOs on bridge maintenance management is enhanced.	2-1 Knowledge (level of understanding on manuals) and skills of engineers who participated in seminars/OJTs on bridge maintenance management and bridge inspections are enhanced (60% of those engineers agree that their knowledge and skills on bridge maintenance management and bridge inspections have been enhanced). 2-2 17 planned pilot projects on bridge repair are implemented.	2-1 Records of seminars and OJTs, Interview with some of participating engineers. 2-2 Monitoring sheets.			
3. Capability of concerned engineers of ROs/DEOs in target Regions (II, III, VII, VIII, and XIII) on special bridge maintenance management is enhanced.	3-1 Knowledge (level of understanding on manuals) and skills of engineers who participated in seminars/OJTs on maintenance management and inspections of special bridges are enhanced (60% of those engineers agree that their knowledge and skills on maintenance management and inspections of special bridges have been enhanced). 3-2 4 planned pilot projects on special bridge repair are implemented.	3-1 Records of seminars and OJTs, Interview with some of participating engineers. 3-2 Monitoring sheets.			

4. Database system to be utilized for road and bridge maintenance management is developed.	4-1 Operation of database system on road slope stability works and bridge repairs (including periodic maintenance) is started.	4-1 Monitoring sheets, database system, and interview with concerned DPWH staff.			

Activities	Inputs	
1-1 Assist conducting seminars/OJTs on road maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs. Recommended List of Equipment/Tools for road maintenance. 1-2 Assist implementing pilot projects on road slope stability and relevant OJTs. Conduct condition inspection of road slope protection in CAR using drone technology. 1-3 Monitor and evaluate situations of road maintenance management by ROs/DEOs. 1-4 Review manuals on road maintenance management and construction supervision developed and/or revised by the Phase-II and make their necessary revisions.	**Japanese side** 1. Experts - Team Leader/Bridge maintenance management - Road maintenance management - Road slope protection - Bridge repair - Special bridge maintenance management - Special bridge repair (1) - Special bridge repair (2) - Database system - Monitoring and evaluation/Coordinator - Other as necessary 2. C/P trainings in Japan and/or third country Japan Training 3times Third Country Training 1 time 3. Provision of equipment - Tools for OJT - Equipment for database system - Others 4. Local expenses necessary for Project activities 5. Video recording of Project activities 6. Invitation to Observation Trip for the Road & Bridge Maintenance in Japan	**Philippine side** 1. C/P - Project Manager - Deputy Project Manager - Project Coordinator - Other Counterpart personnel from Central Office and Regional Offices (CAR, II, III, VII, NIR,VIII, XI, and XIII) for TWG and CWG - Supporting staff - Counterpart personnel from Non-Pilot Regional Offices (NCR, I, IV-A, IV-B, V, VI, IX, X and XII) 2. Suitable office spaces with necessary equipment for the Project implementation at Central Office and Regional Offices (CAR, II, III, VII, XI, and XIII) 3. Project expenses - Implementation of pilot projects - Seminars and workshops - Travel and allowance for participating in Project activities - Others
2-1 Assist conducting seminars/OJTs on bridge maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs. Recommended List of Equipment/Tools for road maintenance. 2-2 Assist conducting seminars/OJTs on bridge engineering inspections by Sustainability Program for concerned engineers of all ROs/DEOs. Bridge Condition Data Review and Bridge Engineering Inspection. 2-3 Assist implementing pilot projects on bridge repair and relevant OJTs. 2-4 Monitor and evaluate situations of bridge maintenance and engineering inspections by ROs/DEOs. 2-5 Review manuals on bridge maintenance management and construction supervision developed and/or revised by the Phase-II and make their necessary revisions.		
3-1 Develop special bridge maintenance and management manual. 3-2 Conduct seminars/OJTs on special bridge maintenance management for concerned engineers of target ROs/DEOs. 3-3 Assist conducting seminars/OJTs on special bridge inspections by Sustainability Program for concerned engineers of target ROs/DEOs (conduct OJT for RO-VIII). Conduct condition inspection of special bridges in RO-II and RO-XIII using drone technology 3-4 Assist implementing pilot projects on special bridge repair and relevant OJTs. 3-5 Monitor and evaluate situations of special bridge inspections by ROs/DEOs. 3-6 Review special bridge inspection manuals developed by the Phase-II and make their necessary revisions.		
4-1 Review current filing situation of documents/data related to road and bridge maintenance management and identify issues to be improved. 4-2 Prepare the basic plan (framework, necessary entry data, operation manner, selection of model RO, etc.) for developing the database system. 4-3 Develop the database system based on the basic plan. 4-4 Enter necessary data and make trial operations of the system at model RO. 4-5 Improve the system in consideration of the results of trial operations at model RO. 4-6 Prepare relevant manuals including operation manner. 4-7 Conduct seminars on the database system and its relevant manuals.		

1. Participation of C/Ps and other concerned engineers in Project activities is ensured.

Pre-condition

1. Philippine government allocates budget for the Project (implementing Sustainability Program) without any major delay.

Appendix 3 Record of Discussion

RECORD OF DISCUSSIONS

ON

THE PROJECT ON IMPROVEMENT OF QUALITY MANAGEMENT FOR ROAD AND BRIDGE CONSTRUCTION AND MAINTENANCE PHASE III

IN

THE REPUBLIC OF THE PHILIPPINES

AGREED UPON BETWEEN

DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

AND

JAPAN INTERNATIONAL COOPERATION AGENCY

Manila, 25 November 2015

Noriaki NIWA
Chief Representative
Japan International Cooperation Agency (JICA)

Rogelio L. Singson
Secretary
Department of Public Works and Highways

Based on the minutes of meetings on the Detailed Planning Survey on the Project on Sustainability Program on Road and Bridge Maintenance Phase III (hereinafter referred to as "the Project") signed on 19th June, 2015 between Department of Public Works and Highways (hereinafter referred to as "DPWH") and the Japan International Cooperation Agency (hereinafter referred to as "JICA"), JICA held a series of discussions with DPWH and relevant organizations to develop a detailed plan of the Project.

Both parties agreed the details of the Project and the main points discussed as described in the Appendix 1 and the Appendix 2 respectively.

Both parties also agreed that DPWH, the counterpart to JICA, will be responsible for the implementation of the Project in cooperation with JICA, coordinate with other relevant organizations and ensure that the self-reliant operation of the Project is sustained during and after the implementation period in order to contribute toward social and economic development of the Republic of the Philippines (hereinafter referred to as "the Philippines").

The Project will be implemented within the framework of the Agreement on Technical Cooperation signed on 4th April, 2006 (hereinafter referred to as "the Agreement") and the Note Verbales exchanged on 11th May, 2015 and 24th September, 2015 between the Government of Japan (hereinafter referred to as "GOJ") and the Government of the Republic of the Philippines (hereinafter referred to as "GOP").

Appendix 1: Project Description
Appendix 2: Main Points Discussed
Appendix 3: Minutes of Meetings on the Detailed Planning Survey on the Project on Sustainability Program on Road and Bridge Maintenance Phase III

Appendix 1

PROJECT DESCRIPTION

I. BACKGROUND

DPWH is the highest administrative agency responsible for the construction and maintenance/management of roads, bridges and other infrastructures in the Republic of the Philippines.

As of February 2014, the present total length of roads in the Philippines is 216,612 km composed of national roads (32,227 km), provincial roads (31,620 km), city/municipal roads (31,063 km), and the barangay roads/others (121,702 km).

In addition to this, the proportion of paved roads is about 83 % and the remaining 17 % is still unpaved.

The total number of bridges in the Philippines is about 8,000 with concrete (6,700), steel (960) and temporary (290).

Therefore, the Medium-Term Program 2011-2016 prepared by DPWH pledged that remaining unpaved roads and highways shall be paved, all temporary bridges shall be replaced by permanent bridges and strengthening of the maintenance/management of the highways as to the highest priority.

The JICA's Technical Cooperation Project for the "Improvement of Quality Management for Highway and Bridge Construction and Maintenance Phase I" (February 2007 - February 2010), "Improvement of Quality Management for Highway and Bridge Construction and Maintenance Phase II"(October 2011 – September 2014) were implemented.

The Government of the Republic of the Philippines requested JICA to assist the sustainability program of the above-mentioned projects. After a series of discussions between DPWH and JICA, it was agreed that JICA will provide assistance to DPWH as the Phase III of the above-mentioned projects.

II. OUTLINE OF THE PROJECT

Details of the Project are described in the tentative Logical Framework (Project Design Matrix: PDM) (Annex 1) and the tentative Plan of Operation (PO) (Annex 2).

1. Title of the Project

The Project on Improvement of Quality Management for Highway and Bridge Construction and Maintenance Phase III

2. Overall Goal

Conditions of roads and bridges administered by DPWH are improved.

3. Project Purpose

Road and bridge maintenance management works of DPWH are improved.

4. Outputs

(1) Capability of concerned engineers of all ROs/DEOs on road maintenance management is enhanced.
(2) Capability of concerned engineers of all ROs/DEOs on bridge maintenance management is enhanced.
(3) Capability of concerned engineers of ROs/DEOs in target Regions (II, III, VII, VIII, and XIII) on special bridge maintenance management is enhanced.
(4) Database system to be utilized for road and bridge maintenance management is developed.

5. Activities

1.1 Assist conducting seminars/OJTs on road maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs.
1.2 Assist implementing pilot projects on road slope stability and relevant OJTs.
1.3 Monitor and evaluate situations of road maintenance management by ROs/DEOs.
1.4 Review manuals on road maintenance management and construction supervision developed and/or revised by the Phase-II and make their necessary revisions.
2.1 Assist conducting seminars/OJTs on bridge maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs.
2.2 Assist conducting seminars/OJTs on bridge engineering inspections by Sustainability Program for concerned engineers of all ROs/DEOs.
2.3 Assist implementing pilot projects on bridge repair and relevant OJTs.
2.4 Monitor and evaluate situations of bridge maintenance and engineering inspections by ROs/DEOs.
2.5 Review manuals on bridge maintenance management and construction supervision developed and/or revised by the Phase-II and make their necessary revisions.
3.1 Develop special bridge maintenance and management manual
3.2 Conduct seminars/OJTs on special bridge maintenance management for concerned engineers of target ROs/DEOs.
3.3 Assist conducting seminars/OJTs on special bridge inspections by Sustainability Program for concerned engineers of target ROs/DEOs (conduct OJT for RO-VIII).
3.4 Assist implementing pilot projects on special bridge repair and relevant OJTs.
3.5 Monitor and evaluate situations of special bridge inspections by ROs/DEOs.
3.6 Review special bridge inspection manuals developed by the Phase-II and make their necessary revisions.
4.1 Review current filing situation of documents/data related to road and bridge maintenance management and identify issues to be improved.
4.2 Prepare the basic plan (framework, necessary entry data, operation manner, selection of model RO, etc.) for developing the database system.
4.3 Develop the database system based on the basic plan.
4.4 Enter necessary data and make trial operations of the system at model RO.

4.5 Improve the system in consideration of the results of trial operations at model RO.
4.6 Prepare relevant manuals including operation manner.
4.7 Conduct seminars on the database system and its relevant manuals.

6. Input

(1) Input by JICA

(a) Dispatch of Experts

Team Leader/Bridge Maintenance Management
Road Maintenance Management
Road Slope Protection
Bridge Repair
Special Bridge Maintenance Management
Special Bridge Repair (1)
Special Bridge Repair (2)
Database System
Monitoring and Evaluation
Other experts necessary for effective implementation of the Project will be decided to be dispatched according to discussion between DPWH and JICA through the Project implementation.

(b) Training

Three times in Japan (once a year) and/or once in third country on road and bridge maintenance technology

(c) Machinery and Equipment

(1) Equipment for database system
(2) Others needed for the Project implementation

In case of importation, the machinery, equipment and other materials under II-6 (1) (c) above will become the property of the GOP upon being delivered C.I.F. (cost, insurance and freight) to the Philippines authorities concerned at the ports and/or airports of disembarkation.

Input other than indicated above will be determined through mutual consultations between JICA and DPWH during the implementation of the Project, as necessary.

(2) Input by DPWH

DPWH will take necessary measures to provide at its own expense:

(a) Services of DPWH's counterpart personnel and administrative personnel as referred to in II-7;
(b) Suitable office space with necessary equipment;
(c) Supply or replacement of machinery, equipment, instruments, vehicles, tools, spare parts and any other materials necessary for the implementation of the Project other than the equipment provided by JICA;
(d) Information as well as support in obtaining medical service;
(e) Credentials or identification cards;
(f) Available data (including maps and photographs) and information related to the Project;
(g) Running expenses necessary for the implementation of the Project;

(h) Expenses necessary for transportation within the Philippines of the equipment referred to in II-6 (1) as well as for the installation, operation and maintenance thereof; and
(i) Necessary facilities to the JICA experts for the remittance as well as utilization of the funds introduced into the Philippines from Japan in connection with the implementation of the Project

7. Implementation Structure

The Project organization chart is given in the Annex 3. The roles and assignments of relevant organizations are as follows:

(1) DPWH

(a) Chairperson
Undersecretary for Technical Services of DPWH will be responsible for overall administration and implementation of the Project.

(b) Vice Chairperson
Assistant Secretary for Technical Services of DPWH will assist Chairperson and represent the Chairperson in case of his/her.

(c) Project Manager
Director, Bureau of Research and Standards will be responsible for the managerial and technical matters of the Project.

(d) Deputy Project Manager
Chief, Division of Planning and Development in Planning Services will assist Project Manager for overall implementation of the Project.

(e) Project Coordinator
Staff of Division of Planning and Development in Planning Services will coordinate implementation of the Project. Coordinator shall be assigned full-time.

(f) Counterpart Personnel
Relevant officers from department and offices in DPWH will be responsible for the managerial and technical matters of the Project.

(g) Supporting Staff
Secretaries

(2) JICA Experts

The JICA experts will give necessary technical guidance, advice and recommendations to DPWH on any matters pertaining to the implementation of the Project.

(3) Joint Coordinating Committee

Joint Coordinating Committee (hereinafter referred to as "JCC") will be established in order to facilitate inter-organizational coordination. JCC will be held at least once a year and whenever deems it necessary. JCC will review the progress, revise the overall plan when necessary, approve an annual work plan, conduct evaluation of the Project, and exchange opinions on major issues that arise during the implementation of the Project. A list of proposed members of JCC is shown in the Annex 4.

8. Project Site(s) and Beneficiaries

(1) Project Site

The roads and bridges which are maintained by DPWH in the Philippines

(2) Direct Beneficiaries

Engineers in Central Office, Regional Offices and District Engineering Offices of DPWH

(3) Indirect Beneficiaries

People in the Republic of the Philippines

9. Duration

The Project will be carried out for approximately three (3) years as shown in Annex 2 (tentative Plan of Operation).

10. Reports

JICA will prepare and submit the following reports to DPWH in English.

(1) Inception Report (Work Plan) at the commencement of the Project

DPWH and JICA experts will jointly prepare the following reports in English.

(1) Monitoring Sheet on semiannual basis until the project completion.

(2) Project Completion Report at the time of the project completion.

11. Environmental and Social Considerations

DPWH will abide by 'JICA Guidelines for Environmental and Social Considerations' in order to ensure that appropriate considerations will be made for the environmental and social impacts of the Project.

12. Management of Safety for Construction Works

For construction works which will be carried out in the Project, DPWH and JICA will assure the management of safety in accordance with the "Safety Plan" and "Method Statements of Safety"submitted by contractors based on the Guidance for the Management of Safety for Construction Works in Japanese ODA Projects.

III. UNDERTAKINGS OF DPWH AND GOP

DPWH and GOP will take necessary measures to:

(1) ensure that the technologies and knowledge acquired by the Philippines nationals as a result of Japanese technical cooperation contributes to the economic and social development of the Republic of the Philippines, and that the knowledge and experience acquired by the personnel of the Philippines from technical training as well as the equipment provided by JICA will be utilized effectively in the implementation of the Project; and

(2) grant privileges, exemptions and benefits to the JICA experts referred to in II-6 (1) above and their families, which are no less favorable than those granted to experts and members of the missions and their families of third countries or international organizations performing similar missions in the Philippines.

IV. MONITORING AND EVALUATION

JICA and the DPWH will jointly and regularly monitor the progress of the Project through the Monitoring Sheets based on the Project Design Matrix (PDM) and Plan of Operation (PO). The Monitoring Sheets will be reviewed every six (6) months. Also, Project Completion Report will be drawn up one (1) month before the termination of the Project.

JICA will conduct the following evaluations and surveys to verify sustainability and impact of the Project and draw lessons. The DPWH is required to provide necessary support for them.

1. Ex-post evaluation three (3) years after the project completion, in principle
2. Follow-up surveys on necessity basis

V. PROMOTION OF PUBLIC SUPPORT

For the purpose of promoting support for the Project, DPWH will take appropriate measures to make the Project widely known to the people of the Philippines.

VI. MISCONDUCT

If JICA receives information related to suspected corrupt or fraudulent practices in the implementation of the Project, DPWH and relevant organizations will provide JICA with such information as JICA may reasonably request, including information related to any concerned official of the government and/or public organizations of the Philippines.

DPWH and relevant organizations will not, unfairly or unfavorably treat the person and/or company which provided the information related to suspected corrupt or fraudulent practices in the implementation of the Project.

VII. MUTUAL CONSULTATION

JICA and DPWH will consult each other whenever any major issues arise in the course of Project implementation.

VIII. AMENDMENTS

The record of discussions may be amended by the minutes of meetings between JICA and DPWH.

The minutes of meetings will be signed by authorized persons of each side who may be different from the signers of the record of discussions.

Annex 1 Logical Framework (Project Design Matrix: PDM)
Annex 2 Tentative Plan of Operation
Annex 3 Project Organization Chart
Annex 4 Joint Coordinating Committee

Annex 1

Project Title: The Project for Improvement of Quality Management for Highway and Bridge Construction and Maintenance, Phase III
Project Period: XX 2015 ~ XXX 2018 (3 years)
Counterpart Agencies: Central Office and Regional Offices (CAR, II, III, VII, VIII, XI and XIII) of DPWH
Target Groups: Engineers in all 16 Regional Offices and their District Engineering Offices of DPWH

Version No. 0
Date : . 2015

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions	Achievement	Remarks
Overall Goal Conditions of roads and bridges administered by DPWH are improved.	1. Ratio of total length of roads with good/fair conditions to that of all roads administrated by DPWH becomes XX% within 3 years after Project completion. 2. Ratio of total number bridges with good/fair conditions to that of all bridges administrated by DPWH becomes XX% within 3 years after Project completion. 3. XX* construction projects on road slope stability are implemented within 3 years after Project completion. *This is same number to that of planned additional construction projects on road slope stability set as an indicator for Project Purpose.	1. Records of DPWH. 2. Records of DPWH. 3. Records of DPWH, interview with concerned staff of DPWH			
Project Purpose Road and bridge maintenance management works of DPWH are improved.	1. Maintenance management works on roads and bridges (including special bridges) are continued by ROs/DEOs in all Regions with utilizing manuals developed and/or revised by the Project. 2. XX additional construction projects on road slope stability and/or bridge repair are planned by XX ROs with utilizing the database system developed by the Project.	1. Monitoring sheets. 2. Monitoring sheets, interview with concerned staff of target ROs.	1. Budgets for implementing maintenance management (including bridge repair and construction for road slope stability) of roads and bridges in all Regions are continued to be ensured. 2. Philippine government policy on road and bridge sector remains consistent.		
Outputs 1. Capability of concerned engineers of all ROs/DEOs on road maintenance management is enhanced.	1-1 Knowledge (level of understanding on manuals) and skills of engineers who participated in seminars/OJTs on road maintenance management are enhanced (XX% of those engineers agree that their knowledge and skills on road maintenance management have been enhanced). 1-2 XX planned pilot projects on road slope stability are implemented.	1-1 Records of seminars and OJTs, Interview with some of participating engineers. 1-2 Monitoring sheets.	1. Engineers participating in Project activities continue working in DPWH. 2. Manuals and guidelines developed or revised by the Project are approved by DPWH Central Office.		
2. Capability of concerned engineers of all ROs/DEOs on bridge maintenance management is enhanced.	2-1 Knowledge (level of understanding on manuals) and skills of engineers who participated in seminars/OJTs on bridge maintenance management and bridge inspections are enhanced (XX% of those engineers agree that their knowledge and skills on bridge maintenance management and bridge inspections have been enhanced). 2-2 XX planned pilot projects on bridge repair are implemented.	2-1 Records of seminars and OJTs, Interview with some of participating engineers. 2-2 Monitoring sheets.			
3. Capability of concerned engineers of ROs/DEOs in target Regions (II, III, VII, VIII, and XIII) on special bridge maintenance management is enhanced.	3-1 Knowledge (level of understanding on manuals) and skills of engineers who participated in seminars/OJTs on maintenance management and inspections of special bridges are enhanced (XX% of those engineers agree that their knowledge and skills on maintenance management and inspections of special bridges have been enhanced). 3-2 XX planned pilot projects on special bridge repair are implemented.	3-1 Records of seminars and OJTs, Interview with some of participating engineers. 3-2 Monitoring sheets.			

4. Database system to be utilized for road and bridge maintenance management is developed.	4-1 Operation of database system on road slope stability works and bridge repairs (including periodic maintenance) is started.	4-1 Monitoring sheets, database system, interview with concerned DPWH staff.			

Activities	Inputs		
1-1 Assist conducting seminars/OJTs on road maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs. 1-2 Assist implementing pilot projects on road slope stability and relevant OJTs. 1-3 Monitor and evaluate situations of road maintenance management by ROs/DEOs. 1-4 Review manuals on road maintenance management and construction supervision developed and/or revised by the Phase-II and make their necessary revisions.	**Japanese side** 1. Experts - Team Leder/Bridge maintenance management - Road maintenance management - Road slope protection - Bridge repair - Special bridge maintenance management - Special bridge repair (1) - Special bridge repair (2) - Database system - Monitoring and evaluation - Other as necessary 2. C/P trainings in Japan and/or third country 3. Provision of equipment - Equipment for database system - Others 4. Local expenses necessary for Project activities	**Philippine side** 1. C/P - Project Manager - Deputy Project Manager - Project Coordinator - Other Counterpart personnel from Central Office and Regional Offices (CAR, II, III, VII, VIII, XI, and XIII) for TWG and CWG - Supporting staff 2. Suitable office spaces with necessary equipment for the Project implementation at Central Office and Regional Offices (CAR, II, III, VII, XI, and XIII) 3. Project expenses - Implementation of pilot projects - Seminars and workshops - Travel and allowance for participating in Project activities - Others	1. Participation of C/Ps and other concerned engineers in Project activities is ensured.
2-1 Assist conducting seminars/OJTs on bridge maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs. 2-2 Assist conducting seminars/OJTs on bridge engineering inspections by Sustainability Program for concerned engineers of all ROs/DEOs. 2-3 Assist implementing pilot projects on bridge repair and relevant OJTs. 2-4 Monitor and evaluate situations of bridge maintenance engineering inspections by ROs/DEOs. 2-5 Review manuals on bridge maintenance management and construction supervision developed and/or revised by the Phase-II and make their necessary revisions.			
3-1 Develop special bridge maintenance and management manual. 3-2 Conduct seminars/OJTs on special bridge maintenance management for concerned engineers of target ROs/DEOs. 3-3 Assist conducting seminars/OJTs on special bridge inspections by Sustainability Program for concerned engineers of target ROs/DEOs (conduct OJT for RO-VIII). 3-4 Assist implementing pilot projects on special bridge repair and relevant OJTs. 3-5 Monitor and evaluate situations of special bridge inspections by ROs/DEOs. 3-6 Review special bridge inspection manuals developed by the Phase-II and make their necessary revisions.			**Pre-condition** 1. Philippine government allocates budget for the Project (implementing Sustainability Program) without any major delay.
4-1 Review current filing situation of documents/data related to road bridge maintenance management and identify issues to be improved. 4-2 Prepare the basic plan (framework, necessary entry data, operation manner, selection of model RO, etc.) for developing the database system. 4-3 Implement developing the database system based on the basic plan. 4-4 Enter necessary data and make trial operations of the system at model RO. 4-5 Improve the system in consideration of the results of trial operations at model RO. 4-6 Prepare relevant manuals including operation manner. 4-7 Conduct seminars on the database system and its relevant manuals.			

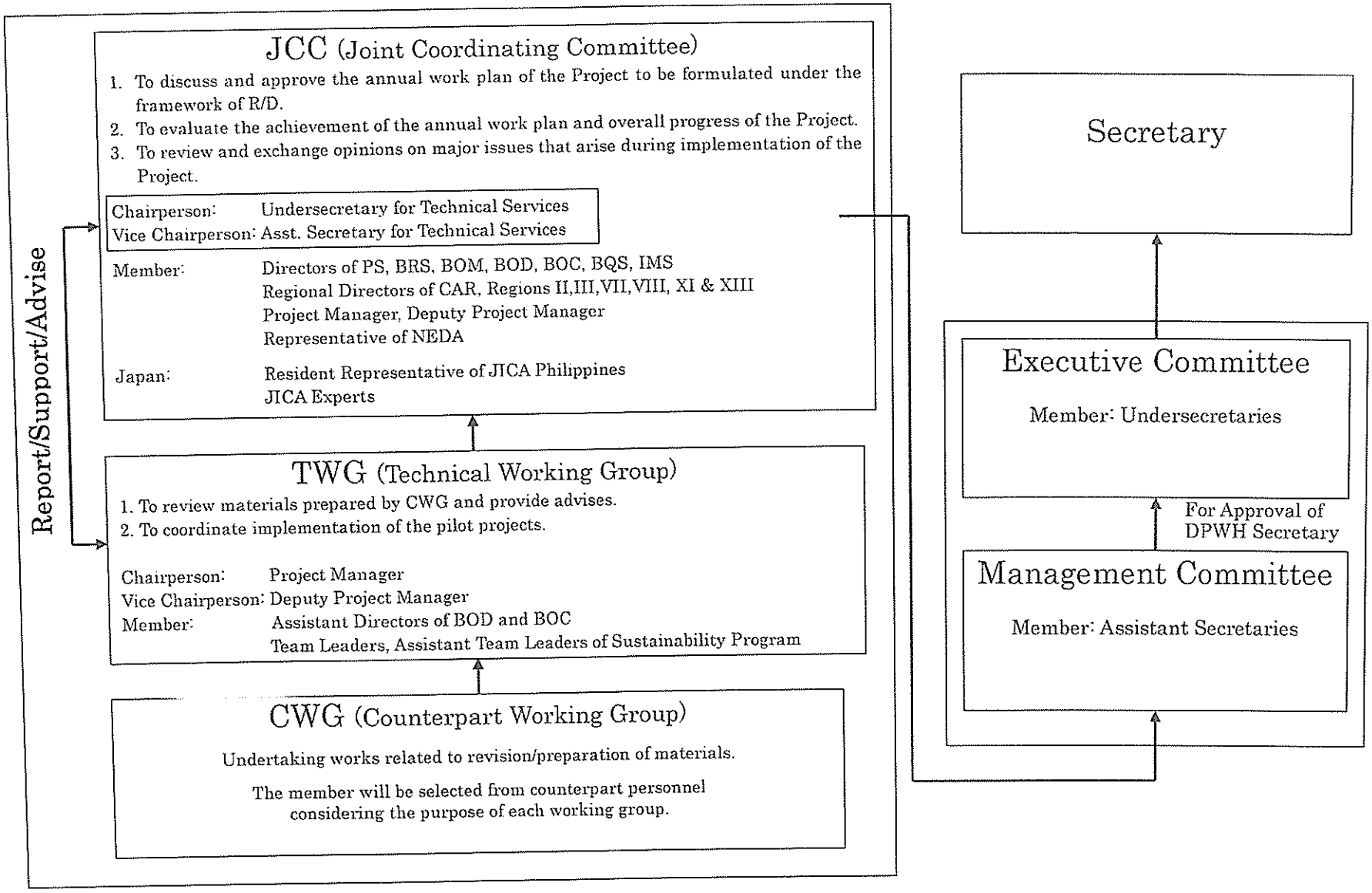
Annex 2

Plan of Operation

Activities	Year-1												Year-2												Year-3											
	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	4	5	6	7	8	9	10	11	12
0-1 Inception Report (Work Plan)																																				
0-2 Joint Coordinating Committee																																				
0-3 Technical Working Group																																				
0-4 Counter part Working Group																																				
0-5 Monitoring of Project (Monitoring Sheet)																																				
0-6 Project Final Report (Draft)																																				
0-7 Project Final Report																																				
1. Capability of concerned engineers of all ROs/ DEOs on road maintenance management is enhanced.																																				
1-1 Assist conducting seminars/OJTs on road maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs																																				
1-2 Assist implementing pilot projects on road slope stability and relevant OJTs.																																				
1-3 Monitor and evaluate situations of road maintenance management by ROs/DEOs.																																				
1-4 Review manuals on road maintenance management and construction supervision developed and/or revised by the Phase-II and make their necessary revisions																																				
2. Capability of concerned engineers of all ROs/ DEOs on bridge maintenance management is enhanced.																																				
2-1 Assist conducting seminars/OJTs on bridge maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs																																				
2-2 Assist conducting seminars/OJTs on bridge engineering inspections by Sustainability Program for concerned engineers of all ROs/DEOs																																				
2-3 Assist implementing pilot projects on bridge repair and relevant OJTs																																				
2-4 Monitor and evaluate situations of bridge maintenance and engineering inspections by ROs/DEOs																																				
2-5 Review manuals on bridge maintenance management and construction supervision developed and/or revised by the Phase-II and make their necessary revisions.																																				
3. Capability of concerned engineers of ROs/ DEOs in target Regions (II, III, VII, VIII, and XIII) on special bridge maintenance management is enhanced.																																				
3-1 Develop special bridge maintenance and management manual																																				
3-2 Conduct seminars/OJTs on special bridge maintenance management for concerned engineers of target ROs/DEOs													1st OJT			2nd OJT			3rd OJT			4th OJT			5th OJT										
3-3 Assist conducting seminars/OJTs on special bridge inspections by Sustainability Program for concerned engineers of target ROs/DEOs (conduct OJT for RO-VIII)																																				
3-4 Assist implementing pilot projects on special bridge repair and relevant OJTs													1st OJT			2nd OJT			3rd OJT			4th OJT													
3-5 Monitor and evaluate situations of special bridge inspections by ROs/DEOs																																				
3-6 Review special bridge inspection manuals developed by the Phase-II and make their necessary revisions																																				
4. Database system to be utilized for road and bridge maintenance management is developed.																																				
4-1 Review current filing situation of documents/data related to road and bridge maintenance management and identify issues to be improved.																																				
4-2 Prepare the basic plan (framework, necessary entry data, operation manner, selection of model RO, etc.) for developing the database system																																				
4-3 Implement developing the database system based on the basic plan																																				
4-4 Enter necessary data and make trial operations of the system at model RO.																																				
4-5 Improve the system in consideration of the results of trial operations at model RO.																																				
4-6 Prepare relevant manuals including operation manner																																				
4-7 Conduct seminars on the database system and its relevant manuals																																				Seminar/OJT
Training in Japan/Third Country △ Japan Training ▲ Third Country Training	△																																			
	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	4	5	6	7	8	9	10	11	12

Annex 3

Project Organization Chart



Annex 4

JOINT COORDINATING COMMITTEE

1. Function

The Joint Coordinating Committee will meet at least once a year and whenever the necessity arises, in order to fulfill the following functions:

1) To discuss and approve the annual work plan of the Project based on the approved annual budget in line with the Plan of Operation formed under the framework of the Record of Discussion;
2) To review the overall progress and annual expenditure of the Project as well as the achievement of the annual work plan mentioned above; and
3) To review and exchange views on major issues arising from or in connection with the Project.

2. Chairperson and Members

1) Chairperson: Undersecretary for Technical Services of DPWH
2) Vice Chairperson: Assistant Secretary for Technical Services of DPWH
3) Member of the Philippines side
   - Director, PS
   - Director, BRS
   - Director, BOC
   - Director, BOM
   - Director, BOD
   - Director, BOQS
   - Director, IMS
   - Regional Director, CAR
   - Regional Director, II
   - Regional Director, III
   - Regional Director, VII
   - Regional Director, VIII
   - Regional Director, XI
   - Regional Director, XIII
   - Project Manager
   - Deputy Project Manager
   - Representative, National Economic and Development Authority
   - Personnel concerned to be nominated by the Philippines side
4) Member of the Japan side
   - JICA experts assigned to the Project
   - Resident Representative of JICA Philippine Office
   - Personnel concerned to be nominated by the Japan side

Notes;

1) Official of the Embassy of Japan may attend the meetings as observer.
2) Persons who are invited by the Chairperson may attend the meeting as observers.

Appendix 2

MAIN POINTS DISCUSSED

1. MAIN CONTENTS OF THE PROJECT

Both sides agreed that the purpose of the Project is to be "Road and bridge maintenance management works are improved in all Regions of DPWH". The Project Purpose will be achieved through 4 Outputs of 1) Capability of concerned engineers of all ROs/DEOs on road maintenance management is enhanced; 2) Capability of concerned engineers of all ROs/DEOs on bridge maintenance management is enhanced; 3) Capability of concerned engineers of ROs/DEOs in target Regions (II, III, VII, VIII, and XIII) on special bridge maintenance management is enhanced; and 4) Database system to be utilized for road and bridge maintenance management is developed.

2. PROJECT DESIGN MATRIX (PDM)

Both sides agreed on the contents of the tentative Logical Framework (Project Design Matrix: PDM) and the tentative Plan of Operation (PO) as shown in Annex 1 and 2 of the R/D. The PDM and PO are to be flexibly revised according to the progress and the achievement of the Project, upon mutual agreement between DPWH and JICA by signing a Minutes of Meetings, according to the R/D.

3. TERMS OF COOPERATION

Both sides agreed that duration of the Project will be three (3) years when JICA experts are first dispatched to the Philippines.

4. COUNTERPART

Both sides agreed that necessary counterparts described in Annex-1 (PDM) of the R/D shall be assigned and informed to JICA before the signing of the R/D. The Team requested DPWH to assign the new young engineers from Central Office and respective Regional Offices (CAR, II, III, VII, VIII, XI and XIII) as counterpart personnel in addition to the Sustainability Program Team for the appropriate technology succession, and DPWH agreed it.

5. TARGETS

Both sides agreed that concerned engineers in all 16 Regional Offices and their District Engineering Offices of DPWH will be the targets of the Project. The Team requested DPWH to consider including young engineers of ROs/DEOs in target participants of relevant seminars and OJTs to be conducted under the Project, and DPWH agreed it.

6. IMPLEMENTAION STRUCTURE

Both sides agreed that Joint Coordination Committee (JCC), Technical Working Group (TWG), and Counterpart Working Group (CWG) will be established shown as in Annex 3 and 4 of the R/D for effective implementation of the Project. This structure will basically be kept till the end of the Project even after the presidential election in June 2016.

7. QUALITY ASSURANCE PROGRAM

Quality Assurance Program (5 years) was approved this year. Both sides agreed that Project activities will be implemented in consideration of the contents and progress of the Program.

8. COORDINATION WITH WORLD BANK "NRIMP-2"

Outsourcing of bridge engineering inspections will be carried out uncer NRIMP-2 though its targets and detailed schedule has not yet been finalized. Both sides agreed that targets for engineering inspections in the Project will be selected in consideration of the targets and schedule of the NRIMP-2.

Preparation of "Project and Contract Management Application (PCMA)" and "Design Development Management Application (DDMA)"aiming to establishing the electronic filing system of relevant data/documents related to construction stages and design stages respectively of all the contracts under GAA is currently underway by NRIMP-2 Both sides agreed that activities relating to Output 4 in the Project will be implemented in coordination with these PCMA and DDMA.

9. PROJECT OFFICES

Both sides agreed necessary office spaces as described in Annex-" (PDM) of the R/D shall be prepared by DPWH Central Office and Regional Cffices (CAR, II, III, VII, XI and XIII) including office furniture and utilities such as internet connection, electricity, air conditioner, etc., before commencement of the Project. The arrangement plan will be informed to JICA before the signing of the R/D.

10. BUDGET FOR THE PROJECT

DPWH confirmed to allocate necessary budget for the implementation of the Project.

11. SAFETY MEASURES AND ENVIROMENTAL CONSIDERATIONS FOR PILOT PROJECT

To avoid accidents on site during the implementation of the pilot projects, DPWH agreed to take and cause the consultant and the contractor take safety measures such as setting safety assurance to the sites, providing information for security control to public, and deploying adequate security personnel, based on "The Guidance for the Management of Safety for Construction Works in Japanese ODA Projects" which has been published on JICA's URL below.

http://www.jica.go.jp/activities/schemes/oda_safety/ku57pq00001nz4eu-att/guidance_en.pdf

JICA recommended DPWH to explain the site citizen about the p lot projects (necessity and significance, construction period, sites, impact etc.), so that wide support of them can be obtained for the smooth operation of the pilot projects, and DPWH agreed it.

In addition, the pilot project construction works may cause negative effects on environments. JICA requested DPWH to consider such environmental effects and to take necessary countermeasures if any, DPWH agreed on it

12. MISCONDUCT

JICA explained the "Anti-Corruption Guidance" which has been published on

JICA's URL below, to DPWH.
http://www.jica.go.jp/english/our_work/types_of_assistance/c8h0vm0000011dfv-att/anti_corruption_guidance.pdf
If JICA receives information related to suspected corrupt or fraudulent practices in the implementation of the Project, DPWH and relevant organizations will provide JICA with such information as JICA may reasonably request, including information related to any concerned official of the government and/or public organizations of the Philippines.
DPWH and relevant organizations will not, unfairly or unfavourably treat the person and/or company which provided the information related to suspected corrupt or fraudulent practices in the implementation of the Project

13. TAX OR LEVY

Both sides confirmed that in case any tax or levy is imposed for equipment provided by Japanese side, DPWH shall be borne the equivalent amount of the tax or levy on import.

MINUTES OF MEETING
BETWEEN
JAPAN INTERNATIONAL COOPERATION AGENCY
AND
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
ON
JAPANESE TECHNICAL COOPERATION PROJECT
FOR
THE PROJECT ON SUSTAINABILITY PROGRAM ON ROAD AND BRIDGE MAINTENANCE PHASE III

In response to the official request of the Republic of the Philippines (hereinafter referred to as "the Philippines"), the Detailed Planning Survey Team (hereinafter referred to as "the Team") organized by Japan International Cooperation Agency (hereinafter referred to as "JICA") headed by Mr. Tomoki Kanenawa, visited the Philippines from June 7 to 20, 2015 for the purpose of working out the details of the technical cooperation programme concerning "the Project on Sustainability Program on Road and Bridge Maintenance Phase III" (hereinafter referred to as "the Project").

During its stay in the Philippines, the Team exchanged views and had a series of discussions for the purpose of working out the framework and contents of the Project with the concerned authorities of Department of Public Works and Highways (hereinafter referred to as "DPWH").

As a result of the discussions, JICA and DPWH agreed upon the matters referred to in the document attached hereto.

Manila, 19th June, 2015

金縄 知樹

Mr. Tomoki Kanenawa
Leader
Detailed Planning Survey Team,
Japan International Cooperation Agency

Mr. Raul C. Asis
Undersecretary for Technical Services
Department of Public Works and Highways
The Republic of the Philippines

ATTACHED DOCUMENT

1. PROJECT TITLE

Both sides agreed that the Project title shall be modified from "The Project on Sustainability Program on Road and Bridge Maintenance Phase III" to "The Project on Improvement of Quality Management for Highway and Bridge Construction and Maintenance Phase III".

2. MAIN CONTENTS OF THE PROJECT

Both sides agreed that the purpose of the Project is to be "Road and bridge maintenance management works of DPWH are improved". The Project Purpose will be achieved through 4 Outputs of 1) Capability of concerned engineers of all ROs/DEOs on road maintenance management is enhanced; 2) Capability of concerned engineers of all ROs/DEOs on bridge maintenance management is enhanced; 3) Capability of concerned engineers of ROs/DEOs in target Regions (II, III, VII, VIII, and XIII) on special bridge maintenance management is enhanced; and 4) Database system to be utilized for road and bridge maintenance management is developed.

3. PROJECT DESIGN MATRIX (PDM)

Both sides agreed on the contents of the tentative Logical Framework (Project Design Matrix: PDM) and the tentative Plan of Operation (PO) as shown in Annex 1 and 2 of the draft R/D. The PDM and PO are to be flexibly revised according to the progress and the achievement of the Project, upon mutual agreement between DPWH and JICA by signing a Minutes of Meetings, according to the draft R/D.

4. TERMS OF COOPERATION

Both sides agreed that duration of the Project will be three (3) years when JICA experts are first dispatched to the Philippines.

5. COUNTERPART

Both sides agreed that necessary counterparts described in Annex 1 (PDM) of the draft R/D shall be assigned and informed to JICA before the signing of the R/D. The Team requested DPWH to assign the new young engineers from Central Office and respective Regional Offices (CAR, II, III, VII, VIII, XI and XIII) as counterpart personnel in addition to the Sustainability Program Team for the appropriate technology succession, and DPWH agreed it.

6. TARGETS

Both sides agreed that concerned engineers in all 16 Regional Offices and their District Engineering Offices of DPWH will be the targets of the Project. The Team requested DPWH to consider including young engineers of ROs/DEOs in target participants of relevant seminars and OJTs to be conducted under the Project, and DPWH agreed it.

7. IMPLEMENTAION STRUCTURE

Both sides agreed that Joint Coordination Committee (JCC), Technical Working Group (TWG), and Counterpart Working Group (CWG) will be established shown as in Annex 3 and 4 of the draft R/D for effective implementation of the Project. This structure will basically be kept till the end of the Project even after the presidential election in June 2016.

8. COORDINATION WITH WORLD BANK "NRIMP-2"

Outsourcing of bridge engineering inspections will be carried out under NRIMP-2 though its targets and detailed schedule has not yet been finalized. Both sides agreed that targets for engineering inspections in the Project will be selected in consideration of the targets and schedule of the NRIMP-2.

Preparation of "Project and Contract Management Application (PCMA)", "Design Documents Management System (DDMS)" and "Design Management Application (DMA)" aiming to establishing the electronic filing system of relevant data/documents related to construction and design stages of all the contracts under GAA is currently underway by NRIMP-2. Both sides agreed that activities relating to Output 4 in the Project will be implemented in coordination with these System and Applications.

9. PROJECT OFFICES

Both sides agreed necessary office spaces as described in Annex 1 (PDM) of the draft R/D shall be prepared by DPWH Central Office and Regional Offices (CAR, II, III, VII, XI and XIII) including office furniture and utilities such as internet connection, electricity, air conditioner, etc., before commencement of the Project. The arrangement plan will be informed to JICA before the signing of the R/D.

10. BUDGET FOR THE PROJECT

DPWH confirmed to allocate necessary budget for the implementation of the Project.

11. SAFETY MEASURES AND ENVIROMENTAL CONSIDERATIONS FOR PILOT PROJECTS

To avoid accidents on site during the implementation of the pilot projects, DPWH agreed to take and cause the consultant and the contractor take safety measures such as setting safety assurance to the sites, providing information for security control to public, and deploying adequate security personnel, based on "The Guidance for the Management of Safety for Construction Works in Japanese ODA Projects" which has been published on JICA's URL below.

http://www.jica.go.jp/activities/schemes/oda_safety/ku57pq00001nz4eu-att/guidance_en.pdf

The Team recommended DPWH to conduct consultations with the stakeholders about the pilot projects (necessity and significance, construction period, sites, impact etc.); so that full support can be obtained for the smooth implementation of the projects, and DPWH agreed it.

In addition, the pilot project construction works may cause negative effects on environments. The Team requested DPWH to consider such environmental effects and to take necessary countermeasures if any, DPWH agreed on it.

12. MISCONDUCT

The Team explained the "Anti-Corruption Guidance" which has been published on JICA's URL below, to DPWH.

http://www.jica.go.jp/english/our_work/types_of_assistance/c8h0vm0000011dfv-att/anti_corruption_guidance.pdf

If JICA receives information related to suspected corrupt or fraudulent practices in the implementation of the Project, DPWH and relevant organizations will provide JICA with such information as JICA may reasonably request, including information related to any concerned official of the government and/or public organizations of the Philippines.

DPWH and relevant organizations will not, unfairly or unfavourably treat the person and/or company which provided the information related to suspected corrupt or fraudulent practices in the implementation of the Project.

13. TAX OR LEVY

Both sides confirmed that in case any tax or levy is imposed for equipment provided by Japanese side, DPWH shall be borne the equivalent amount of the tax or levy on import.

14. RECORD OF DISCUSSIONS

Both sides agreed that the Record of Discussions (R/D), the draft of which is attached hereto, will determine the framework of the Project. The R/D will be agreed and signed between JICA and DPWH after the formal approval by both sides.

Attachment Draft Record of Discussions

DRAFT RECORD OF DISCUSSIONS

ON

THE PROJECT ON IMPROVEMENT OF QUALITY MANAGEMENT FOR ROAD AND BRIDGE CONSTRUCTION AND MAINTENANCE PHASE III

IN

THE REPUBLIC OF THE PHILIPPINES

AGREED UPON BETWEEN

DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

AND

JAPAN INTERNATIONAL COOPERATION AGENCY

[name of the city], [date]

[Representative of JICA]	[Representative of implementing agency]

Based on the minutes of meetings on the Detailed Planning Survey on the Project on Sustainability Program on Road and Bridge Maintenance Phase III (hereinafter referred to as "the Project") signed on 19th June, 2015 between Department of Public Works and Highways (hereinafter referred to as "DPWH") and the Japan International Cooperation Agency (hereinafter referred to as "JICA"), JICA held a series of discussions with DPWH and relevant organizations to develop a detailed plan of the Project.

Both parties agreed the details of the Project and the main points discussed as described in the Appendix 1 and the Appendix 2 respectively.

Both parties also agreed that DPWH, the counterpart to JICA, will be responsible for the implementation of the Project in cooperation with JICA, coordinate with other relevant organizations and ensure that the self-reliant operation of the Project is sustained during and after the implementation period in order to contribute toward social and economic development of the Republic of the Philippines (hereinafter referred to as "the Philippines").

The Project will be implemented within the framework of the Agreement on Technical Cooperation signed on 4th April, 2006 (hereinafter referred to as "the Agreement") and the Note Verbales exchanged on 11th May, 2015 between the Government of Japan (hereinafter referred to as "GOJ") and the Government of the Republic of the Philippines (hereinafter referred to as "GOP").

Appendix 1: Project Description
Appendix 2: Main Points Discussed
Appendix 3: Minutes of Meetings on the Detailed Planning Survey on the Project on Sustainability Program on Road and Bridge Maintenance Phase III

Appendix 1

PROJECT DESCRIPTION

I. BACKGROUND

DPWH is the highest administrative agency responsible for the construction and maintenance/management of roads, bridges and other infrastructures in the Republic of the Philippines.

As of February 2014, the present total length of roads in the Philippines is 216,612 km composed of national roads (32,227 km), provincial roads (31,620 km), city/municipal roads (31,063 km), and the barangay roads/others (121,702 km).

In addition to this, the proportion of paved roads is about 83 % and the remaining 17 % is still unpaved.

The total number of bridges in the Philippines is about 8,000 with concrete (6,700), steel (960) and temporary (290).

Therefore, the Medium-Term Program 2011-2016 prepared by DPWH pledged that remaining unpaved roads and highways shall be paved, all temporary bridges shall be replaced by permanent bridges and strengthening of the maintenance/management of the highways as to the highest priority.

The JICA's Technical Cooperation Project for the "Improvement of Quality Management for Highway and Bridge Construction and Maintenance Phase I" (February 2007 - February 2010), "Improvement of Quality Management for Highway and Bridge Construction and Maintenance Phase II"(October 2011 – September 2014) were implemented.

The Government of the Republic of the Philippines requested JICA to assist the sustainability program of the above-mentioned projects. After a series of discussions between DPWH and JICA, it was agreed that JICA will provide assistance to DPWH as the Phase III of the above-mentioned projects.

II. OUTLINE OF THE PROJECT

Details of the Project are described in the tentative Logical Framework (Project Design Matrix: PDM) (Annex 1) and the tentative Plan of Operation (PO) (Annex 2).

1. Title of the Project

The Project on Improvement of Quality Management for Highway and Bridge Construction and Maintenance Phase III

2. Overall Goal

Conditions of roads and bridges administered by DPWH are improved.

3. Project Purpose

Road and bridge maintenance management works of DPWH are improved.

4. Outputs

(1) Capability of concerned engineers of all ROs/DEOs on road maintenance management is enhanced.
(2) Capability of concerned engineers of all ROs/DEOs on bridge maintenance management is enhanced.
(3) Capability of concerned engineers of ROs/DEOs in target Regions (II, III, VII, VIII, and XIII) on special bridge maintenance management is enhanced.
(4) Database system to be utilized for road and bridge maintenance management is developed.

5. Activities

1.1 Assist conducting seminars/OJTs on road maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs.
1.2 Assist implementing pilot projects on road slope stability and relevant OJTs.
1.3 Monitor and evaluate situations of road maintenance management by ROs/DEOs.
1.4 Review manuals on road maintenance management and construction supervision developed and/or revised by the Phase-II and make their necessary revisions.
2.1 Assist conducting seminars/OJTs on bridge maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs.
2.2 Assist conducting seminars/OJTs on bridge engineering inspections by Sustainability Program for concerned engineers of all ROs/DEOs.
2.3 Assist implementing pilot projects on bridge repair and relevant OJTs.
2.4 Monitor and evaluate situations of bridge maintenance and engineering inspections by ROs/DEOs.
2.5 Review manuals on bridge maintenance management and construction supervision developed and/or revised by the Phase-II and make their necessary revisions.
3.1 Develop special bridge maintenance and management manual.
3.2 Conduct seminars/OJTs on special bridge maintenance management for concerned engineers of target ROs/DEOs.
3.3 Assist conducting seminars/OJTs on special bridge inspections by Sustainability Program for concerned engineers of target ROs/DEOs (conduct OJT for RO-VIII).
3.4 Assist implementing pilot projects on special bridge repair and relevant OJTs.
3.5 Monitor and evaluate situations of special bridge inspections by ROs/DEOs.
3.6 Review special bridge inspection manuals developed by the Phase-II and make their necessary revisions.
4.1 Review current filing situation of documents/data related to road and bridge maintenance management and identify issues to be improved.
4.2 Prepare the basic plan (framework, necessary entry data, operation manner, selection of model RO, etc.) for developing the database system.
4.3 Develop the database system based on the basic plan.
4.4 Enter necessary data and make trial operations of the system at model RO.

4.5 Improve the system in consideration of the results of trial operations at model RO.
4.6 Prepare relevant manuals including operation manner.
4.7 Conduct seminars on the database system and its relevant manuals.

6. Input

(1) Input by JICA

(a) Dispatch of Experts

Team Leader/Bridge Maintenance Management
Road Maintenance Management
Road Slope Protection
Bridge Repair
Special Bridge Maintenance Management
Special Bridge Repair (1)
Special Bridge Repair (2)
Database System
Monitoring and Evaluation
Other experts necessary for effective implementation of the Project will be decided to be dispatched according to discussion between DPWH and JICA through the Project implementation.

(b) Training

Three times in Japan (once a year) and/or once in third country on road and bridge maintenance technology

(c) Machinery and Equipment

(1) Equipment for database system
(2) Others needed for the Project implementation

In case of importation, the machinery, equipment and other materials under II-6 (1) (c) above will become the property of the GOP upon being delivered C.I.F. (cost, insurance and freight) to the Philippines authorities concerned at the ports and/or airports of disembarkation.

Input other than indicated above will be determined through mutual consultations between JICA and DPWH during the implementation of the Project, as necessary.

(2) Input by DPWH

DPWH will take necessary measures to provide at its own expense:

(a) Services of DPWH's counterpart personnel and administrative personnel as referred to in II-7;
(b) Suitable office space with necessary equipment;
(c) Supply or replacement of machinery, equipment, instruments, vehicles, tools, spare parts and any other materials necessary for the implementation of the Project other than the equipment provided by JICA;
(d) Information as well as support in obtaining medical service;
(e) Credentials or identification cards;
(f) Available data (including maps and photographs) and information related to the Project;
(g) Running expenses necessary for the implementation of the Project;

(h) Expenses necessary for transportation within the Philippines of the equipment referred to in II-6 (1) as well as for the installation, operation and maintenance thereof; and
(i) Necessary facilities to the JICA experts for the remittance as well as utilization of the funds introduced into the Philippines from Japan in connection with the implementation of the Project

7. Implementation Structure

The Project organization chart is given in the Annex 3. The roles and assignments of relevant organizations are as follows:

(1) DPWH

(a) Chairperson
Undersecretary for Technical Services of DPWH will be responsible for overall administration and implementation of the Project.

(b) Vice Chairperson
Assistant Secretary for Technical Services of DPWH will assist Chairperson and represent the Chairperson in case of his/her.

(c) Project Manager
Director, Bureau of Research and Standards will be responsible for the managerial and technical matters of the Project.

(d) Deputy Project Manager
Chief, Division of Planning and Development in Planning Services will assist Project Manager for overall implementation of the Project.

(e) Project Coordinator
Staff of Division of Planning and Development in Planning Services will coordinate implementation of the Project. Coordinator shall be assigned full-time.

(f) Counterpart Personnel
Relevant officers from department and offices in DPWH will be responsible for the managerial and technical matters of the Project.

(g) Supporting Staff
Secretaries

(2) JICA Experts

The JICA experts will give necessary technical guidance, advice and recommendations to DPWH on any matters pertaining to the implementation of the Project.

(3) Joint Coordinating Committee

Joint Coordinating Committee (hereinafter referred to as "JCC") will be established in order to facilitate inter-organizational coordination. JCC will be held at least once a year and whenever deems it necessary. JCC will review the progress, revise the overall plan when necessary, approve an annual work plan, conduct evaluation of the Project, and exchange opinions on major issues that arise during the implementation of the Project. A list of proposed members of JCC is shown in the Annex 4.

8. Project Site(s) and Beneficiaries

(1) Project Site

The roads and bridges which are maintained by DPWH in the Philippines

(2) Direct Beneficiaries

Engineers in Central Office, Regional Offices and District Engineering Offices of DPWH

(3) Indirect Beneficiaries

People in the Republic of the Philippines

9. Duration

The Project will be carried out for approximately three (3) years as shown in Annex 2 (tentative Plan of Operation).

10. Reports

JICA will prepare and submit the following reports to DPWH in Engl sh.

(1) Inception Report (Work Plan) at the commencement of the Project

DPWH and JICA experts will jointly prepare the following reports in English.

(1) Monitoring Sheet on semiannual basis until the project completion.

(2) Project Completion Report at the time of the project completion.

11. Environmental and Social Considerations

DPWH will abide by 'JICA Guidelines for Environmental and Social Considerations' in order to ensure that appropriate considerations will be made for the environmental and social impacts of the Project.

12. Management of Safety for Construction Works

For construction works which will be carried out in the Project, DPWH and JICA will assure the management of safety in accordance with the "Safety Plan" and "Method Statements of Safety"submitted by contractors based on the Guidance for the Management of Safety for Construction Works in Japanese ODA Projects.

III. UNDERTAKINGS OF DPWH AND GOP

DPWH and GOP will take necessary measures to:

(1) ensure that the technologies and knowledge acquired by the Philippines nationals as a result of Japanese technical cooperation contributes to the economic and social development of the Republic of the Philippines, and that the knowledge and experience acquired by the personnel of the Philippines from technical training as well as the equipment provided by JICA will be utilized effectively in the implementation of the Project; and

(2) grant privileges, exemptions and benefits to the JICA experts referred to in II-6 (1) above and their families, which are no less favorable than those granted to experts and members of the missions and their families of third countries or international organizations performing similar missions in the Philippines.

IV. MONITORING AND EVALUATION

JICA and the DPWH will jointly and regularly monitor the progress of the Project through the Monitoring Sheets based on the Project Design Matrix (PDM) and Plan of Operation (PO). The Monitoring Sheets will be reviewed every six (6) months. Also, Project Completion Report will be drawn up one (1) month before the termination of the Project.

JICA will conduct the following evaluations and surveys to verify sustainability and impact of the Project and draw lessons. The DPWH is required to provide necessary support for them.

1. Ex-post evaluation three (3) years after the project completion, in principle
2. Follow-up surveys on necessity basis

V. PROMOTION OF PUBLIC SUPPORT

For the purpose of promoting support for the Project, DPWH will take appropriate measures to make the Project widely known to the people of the Philippines.

VI. MISCONDUCT

If JICA receives information related to suspected corrupt or fraudulent practices in the implementation of the Project, DPWH and relevant organizations will provide JICA with such information as JICA may reasonably request, including information related to any concerned official of the government and/or public organizations of the Philippines.

DPWH and relevant organizations will not, unfairly or unfavorably treat the person and/or company which provided the information related to suspected corrupt or fraudulent practices in the implementation of the Project.

VII. MUTUAL CONSULTATION

JICA and DPWH will consult each other whenever any major issues arise in the course of Project implementation.

VIII. AMENDMENTS

The record of discussions may be amended by the minutes of meetings between JICA and DPWH.

The minutes of meetings will be signed by authorized persons of each side who may be different from the signers of the record of discussions.

Annex 1 Logical Framework (Project Design Matrix: PDM)
Annex 2 Tentative Plan of Operation
Annex 3 Project Organization Chart
Annex 4 Joint Coordinating Committee

Annex 1

Project Title: The Project for Improvement of Quality Management for Highway and Bridge Construction and Maintenance, Phase III
Project Period: XX 2015 ~ XXX 2018 (3 years)
Counterpart Agencies: Central Office and Regional Offices (CAR, II, III, VII, VIII, XI and XIII) of DPWH
Target Groups: Engineers in all 16 Regional Offices and their District Engineering Offices of DPWH

Version No. 0
Date : . 2015

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions	Achievement	Remarks
Overall Goal Conditions of roads and bridges administered by DPWH are improved.	1. Ratio of total length of roads with good/fair conditions to that of all roads administrated by DPWH becomes XX% within 3 years after Project completion. 2. Ratio of total number bridges with good/fair conditions to that of all bridges administrated by DPWH becomes XX% within 3 years after Project completion. 3. XX* construction projects on road slope stability are implemented within 3 years after Project completion. *This is same number to that of planned additional construction projects on road slope stability set as an indicator for Project Purpose.	1. Records of DPWH. 2. Records of DPWH. 3. Records of DPWH, interview with concerned staff of DPWH			
Project Purpose Road and bridge maintenance management works of DPWH are improved.	1. Maintenance management works on roads and bridges (including special bridges) are continued by ROs/DEOs in all Regions with utilizing manuals developed and/or revised by the Project. 2. XX additional construction projects on road slope stability and/or bridge repair are planned by XX ROs with utilizing the database system developed by the Project.	1. Monitoring sheets. 2. Monitoring sheets, interview with concerned staff of target ROs.	1. Budgets for implementing maintenance management (including bridge repair and construction for road slope stability) of roads and bridges in all Regions are continued to be ensured. 2. Philippine government policy on road and bridge sector remains consistent.		
Outputs 1. Capability of concerned engineers of all ROs/DEOs on road maintenance management is enhanced.	1-1 Knowledge (level of understanding on manuals) and skills of engineers who participated in seminars/OJTs on road maintenance management are enhanced (XX% of those engineers agree that their knowledge and skills on road maintenance management have been enhanced). 1-2 XX planned pilot projects on road slope stability are implemented.	1-1 Records of seminars and OJTs, Interview with some of participating engineers. 1-2 Monitoring sheets.	1. Engineers participating in Project activities continue working in DPWH. 2. Manuals and guidelines developed or revised by the Project are approved by DPWH Central Office.		
2. Capability of concerned engineers of all ROs/DEOs on bridge maintenance management is enhanced.	2-1 Knowledge (level of understanding on manuals) and skills of engineers who participated in seminars/OJTs on bridge maintenance management and bridge inspections are enhanced (XX% of those engineers agree that their knowledge and skills on bridge maintenance management and bridge inspections have been enhanced). 2-2 XX planned pilot projects on bridge repair are implemented.	2-1 Records of seminars and OJTs, Interview with some of participating engineers. 2-2 Monitoring sheets.			
3. Capability of concerned engineers of ROs/DEOs in target Regions (II, III, VII, VIII, and XIII) on special bridge maintenance management is enhanced.	3-1 Knowledge (level of understanding on manuals) and skills of engineers who participated in seminars/OJTs on maintenance management and inspections of special bridges are enhanced (XX% of those engineers agree that their knowledge and skills on maintenance management and inspections of special bridges have been enhanced). 3-2 XX planned pilot projects on special bridge repair are implemented.	3-1 Records of seminars and OJTs, Interview with some of participating engineers. 3-2 Monitoring sheets.			

4. Database system to be utilized for road and bridge maintenance management is developed.	4-1 Operation of database system on road slope stability works and bridge repairs (including periodic maintenance) is started.	4-1 Monitoring sheets, database system, and interview with concerned DPWH staff.			

Activities	Inputs		
1-1 Assist conducting seminars/OJTs on road maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs. 1-2 Assist implementing pilot projects on road slope stability and relevant OJTs. 1-3 Monitor and evaluate situations of road maintenance management by ROs/DEOs. 1-4 Review manuals on road maintenance management and construction supervision developed and/or revised by the Phase-II and make their necessary revisions.	**Japanese side** 1. Experts - Team Leader/Bridge maintenance management - Road maintenance management - Road slope protection - Bridge repair - Special bridge maintenance management - Special bridge repair (1) - Special bridge repair (2) - Database system - Monitoring and evaluation - Other as necessary 2. C/P trainings in Japan and/or third country 3. Provision of equipment - Equipment for database system - Others 4. Local expenses necessary for Project activities	**Philippine side** 1. C/P - Project Manager - Deputy Project Manager - Project Coordinator - Other Counterpart personnel from Central Office and Regional Offices (CAR, II, III, VII, VIII, XI, and XIII) for TWG and CWG - Supporting staff 2. Suitable office spaces with necessary equipment for the Project implementation at Central Office and Regional Offices (CAR, II, III, VII, XI, and XIII) 3. Project expenses - Implementation of pilot projects - Seminars and workshops - Travel and allowance for participating in Project activities - Others	1. Participation of C/Ps and other concerned engineers in Project activities is ensured.
2-1 Assist conducting seminars/OJTs on bridge maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs. 2-2 Assist conducting seminars/OJTs on bridge engineering inspections by Sustainability Program for concerned engineers of all ROs/DEOs. 2-3 Assist implementing pilot projects on bridge repair and relevant OJTs. 2-4 Monitor and evaluate situations of bridge maintenance engineering inspections by ROs/DEOs. 2-5 Review manuals on bridge maintenance management and construction supervision developed and/or revised by the Phase-II and make their necessary revisions.			
3-1 Develop special bridge maintenance and management manual. 3-2 Conduct seminars/OJTs on special bridge maintenance management for concerned engineers of target ROs/DEOs. 3-3 Assist conducting seminars/OJTs on special bridge inspections by Sustainability Program for concerned engineers of target ROs/DEOs (conduct OJT for RO-VIII). 3-4 Assist implementing pilot projects on special bridge repair and relevant OJTs. 3-5 Monitor and evaluate situations of special bridge inspections by ROs/DEOs. 3-6 Review special bridge inspection manuals developed by the Phase-II and make their necessary revisions.			**Pre-condition** 1. Philippine government allocates budget for the Project (implementing Sustainability Program) without any major delay.
4-1 Review current filing situation of documents/data related to road and bridge maintenance management and identify issues to be improved. 4-2 Prepare the basic plan (framework, necessary entry data, operation manner, selection of model RO, etc.) for developing the database system. 4-3 Develop the database system based on the basic plan. 4-4 Enter necessary data and make trial operations of the system at model RO. 4-5 Improve the system in consideration of the results of trial operations at model RO. 4-6 Prepare relevant manuals including operation manner. 4-7 Conduct seminars on the database system and its relevant manuals.			

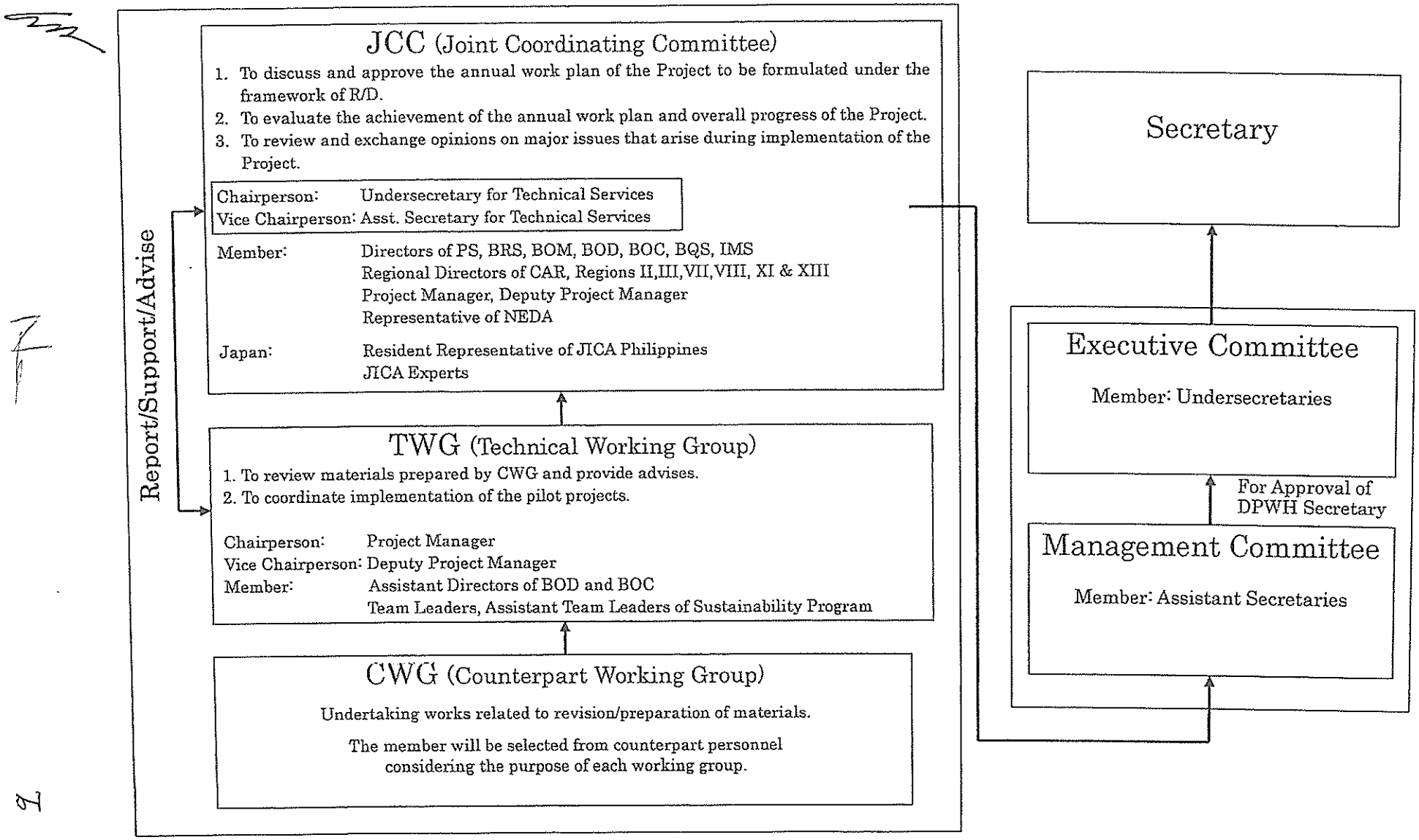
Annex 2

Plan of Operation

	Activities	Year-1												Year-2												Year-3											
		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	4	5	6	7	8	9	10	11	12
0-1	Inception Report (Work Plan)																																				
0-2	Joint Coordinating Committee																																				
0-3	Technical Working Group																																				
0-4	Counter part Working Group																																				
0-5	Monitoring of Project (Monitoring Sheet)																																				
0-6	Project Final Report (Draft)																																				
0-7	Project Final Report																																				
	1. Capability of concerned engineers of all ROs/ DEOs on road maintenance management is enhanced.																																				
1-1	Assist conducting seminars/OJTs on road maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs.																																				
1-2	Assist implementing pilot projects on road slope stability and relevant OJTs.																																				
1-3	Monitor and evaluate situations of road maintenance management by ROs/DEOs.																																				
1-4	Review manuals on road maintenance management and construction supervision developed and/or revised by the Phase-II and make their necessary revisions.																																				
	2. Capability of concerned engineers of all ROs/ DEOs on bridge maintenance management is enhanced.																																				
2-1	Assist conducting seminars/OJTs on bridge maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs.																																				
2-2	Assist conducting seminars/OJTs on bridge engineering inspections by Sustainability Program for concerned engineers of all ROs/DEOs.																																				
2-3	Assist implementing pilot projects on bridge repair and relevant OJTs.																																				
2-4	Monitor and evaluate situations of bridge maintenance and engineering inspections by ROs/DEOs.																																				
2-5	Review manuals on bridge maintenance management and construction supervision developed and/or revised by the Phase-II and make their necessary revisions.																																				
	3. Capability of concerned engineers of ROs/ DEOs in target Regions (II, III, VII, VIII, and XIII) on special bridge maintenance management is enhanced.																																				
3-1	Develop special bridge maintenance and management manual.																																				
3-2	Conduct seminars/OJTs on special bridge maintenance management for concerned engineers of target ROs/DEOs.													1st OJT			2nd OJT			3rd OJT			4th OJT			5th OJT										
3-3	Assist conducting seminars/OJTs on special bridge inspections by Sustainability Program for concerned engineers of target ROs/DEOs (conduct OJT for RO-VIII).																																				
3-4	Assist implementing pilot projects on special bridge repair and relevant OJTs.									1st OJT				2nd OJT			3rd OJT			4th OJT																
3-5	Monitor and evaluate situations of special bridge inspections by ROs/DEOs.																																				
3-6	Review special bridge inspection manuals developed by the Phase-II and make their necessary revisions.																																				
	4. Database system to be utilized for road and bridge maintenance management is developed.																																				
4-1	Review current filing situation of documents/data related to road and bridge maintenance management and identify issues to be improved.																																				
4-2	Prepare the basic plan (framework, necessary entry data, operation manner, selection of model RO, etc.) for developing the database system.																																				
4-3	Implement developing the database system based on the basic plan.																																				
4-4	Enter necessary data and make trial operations of the system at model RO.																																				
4-5	Improve the system in consideration of the results of trial operations at model RO.																																				
4-6	Prepare relevant manuals including operation manner.																																				
4-7	Conduct seminars on the database system and its relevant manuals.																															Seminar/OJT					
	Training in Japan/Third Country: △: Japan Training △: Third Country Training					△											△					△															
		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	4	5	6	7	8	9	10	11	12

Annex 3

Project Organization Chart



Annex 4

JOINT COORDINATING COMMITTEE

1. Function

The Joint Coordinating Committee will meet at least once a year and whenever the necessity arises, in order to fulfill the following functions:

1) To discuss and approve the annual work plan of the Project based on the approved annual budget in line with the Plan of Operation formed under the framework of the Record of Discussion;
2) To review the overall progress and annual expenditure of the Project as well as the achievement of the annual work plan mentioned above; and
3) To review and exchange views on major issues arising from or in connection with the Project.

2. Chairperson and Members

1) Chairperson: Undersecretary for Technical Services of DPWH
2) Vice Chairperson: Assistant Secretary for Technical Services of DPWH
3) Member of the Philippines side
   - Director, PS
   - Director, BRS
   - Director, BOC
   - Director, BOM
   - Director, BOD
   - Director, BQS
   - Director, IMS
   - Regional Director, CAR
   - Regional Director, II
   - Regional Director, III
   - Regional Director, VII
   - Regional Director, VIII
   - Regional Director, XI
   - Regional Director, XIII
   - Project Manager
   - Deputy Project Manager
   - Representative, National Economic and Development Authority
   - Personnel concerned to be nominated by the Philippines side
4) Member of the Japan side
   - JICA experts assigned to the Project
   - Resident Representative of JICA Philippine Office
   - Personnel concerned to be nominated by the Japan side

Notes;

1) Official of the Embassy of Japan may attend the meetings as observer.
2) Persons who are invited by the Chairperson may attend the meeting as observers.