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
 - Description of 17 (seventeen) planned projects Yearly Budget and selected site and method of each project are shown below.

| Approved Budget Select | | Selecte | ed site and method | | |
|----------------------------|--------------------|--------------|--------------------|-------------------------------|-----------------------|
| | Regi | PhP | Proj. | Location | Method |
| | on | Million | No. | | |
| Approved 2016 Budget | | | t | | |
| 1 | V | 10.00 | 1 | Ligao-Pio Duran Road | Terramesh |
| 2 | VI | 10.00 | 2 | Guimbal-Igbaras-Tubungan-Leon | Grouted riprap, Stone |
| | | | | Road | masonry |
| 3 | Х | <u>10.00</u> | | Project Failed | |
| (Subtotal) (20.00) excludi | | | excludi | ng 1 failed Project | |
| Approved 2017 Budget | | | t | | |
| 1 | 1 III <u>20.00</u> | | | Project Failed | |

Table 2.1.1.2-1 Pilot Projects on Road Slope Protection

| 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 | Х | 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 | Non-Frame method |
| | | | | Section) | |
| (Su | btotal) (| 90.00) excl | uding 2 | failed Projects | |
| App | proved 2 | 2018 Budge | t | | |
| 1 | CAR | 70.00 | 8 | Acop-Kapangan-Kibungan Road | Curtain net |
| 2 | Ι | 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 | Non-Frame method, |
| | | | | Road | 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 | Non-Frame method |
| | | | | Section) | |
| (Su | btotal) (| 350.00) | | | |
| Total 460.00 | | 1 | | | |

(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.



- 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.

| RO | Team 1 | Team 2 | Venue | Accomplishmen t Report |
|---------------|--|--|-------|---------------------------|
| XI &XIII | Apr 13-17, 2015 Apr 20-24, 2015 | | I | 0 |
| VII & VI | | May 18 - 22, 2015 June 1 - 5, 2015 | VII | 0 |
| CAR & I | Jul 20 - 24,2015 Jul 27 - 31,2015 | | CAR | 0 |
| X & XII | | Sep 14 - 18, 2015 Sep 21 - 25, 2015 | Х | 0 |
| 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 | 0 |
| V & VIII | Feb 29 - Mar 4, 2016 Mar 7 - 11, 2016 | | V | |
| & | | May 16 - 20, 2016 May 23 - 27, 2016 | II | |
| IX | Jul 18 - 22, 2016 Jul 25 - 29, 2016 | | IX | 0 |

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





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.

| ÷Ζ. | 2. 1.2. 1-2 Result of Fost Training Survey on Road and Bhuge Maintenance Fractice | | | | |
|-----|---|--------|--------|--|--|
| | 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% | | |

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

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.





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.

| 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% |

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

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





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.

| 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% |

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

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.

| REGION | MUČH | 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% |

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

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.

| 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% |

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

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.





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.







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.

| | | Froject on bhuye Repair during Friase III |
|------------------|--------|---|
| Pilot Project | Bridge | Object RO |
| | Repair | |
| 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 2.1.2.2-1 | Implemented | Pilot Project or | n Bridge Rep | air during Phase III |
|-----------------|-------------|------------------|--------------|----------------------|
| | | | | |

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

| Field Training | Bridge | Object RO |
|------------------|--------|--|
| | Repair | |
| 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

| | | | | | rianning c | | uge | rtope | | | | | | |
|-------------------|---------|---------------------------------|--|--------------|---------------------------------|---|--------|--------|--------|--------|---------|----------|---------|--------|
| Field Training | Region | Period | Name of Pilot Project Used in | No. of | Written Exam Rating (Overall | Written Exam Understanding of Objectives After Training (Sum of Level 3, Level 3, Level 5) Level 5) | | | | | | 3, Level | 4 and | |
| # | | | Training | Participants | %) | 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 |

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

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 | Numbers of Bridg | ge Repair Projects | in accordance v | vith BRM 201 | 4 edition in |
|---------------------|---|--------------------|-----------------|--------------|--------------|
| Regional | | all regional offic | ces during Phas | e III | |
| Offices | 2016 | 2017 | 2018 | 2019 | Total |
| (RO I, II, III, IV- | 262 | 415 | 230 | 184 | 1091 |
| A, IV-B, V, VI, | /-B, V, VI, Numbers of seminars/Re-echo Training conducted after Bridge F | | | | Repair Pilot |
| VII, VIII, XI, X, | Project in all region during Phase III | | | | |
| XI, XII, XIII, | 2016 | 2017 | 2018 | 2019 | Total |
| CAR and NCR) | 4 | 6 | 11 | 1 | 22 |
| | Numbers of Er | 630 | | | |
| | Repair Technol | logy in accordance | with Bridge | | |
| | | Repair Manual | | | |

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.1 FT | No.2 FT | No.3 FT | No.4 FT | No.5 FT | No.6 FT | No.7 FT | |
|-------------------|--|---|--|--|--|--|---|--|---|
| No. | Lecture Item | RO CAR | RO I | RO IV-A | RO IV-B | RO IX | RO VI | RO VIII | |
| | | April 11-13, 2016 | April 20-22, 2016 | August 17-19, 2016 | January 11-13, 2017 | March 29-31, 2017 | August 23-25,2017 | 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 | |
| | | M. O.DT | NL O DT | NL 10 DT | NL 11 DT | NL 10 DT | NT. LADO | NL 14 DT | 37 4 6 7000 |
| | | N0.8 F1 | N0.9 F1 | NO.10 F1 | NO.11 F1 | NO.12 F1 | NO.13F1 | N0.14 F1 | No.15 FT |
| No. | Lecture Item | RO XIII | RO III | RO V | RO NCR | RO XII | RO X | RO VI(N.Occ.) | RO II |
| No. | Lecture Item | No.8 F1 RO XIII Nov.7-9,2017 | RO III Nov. 15-17,2017 | RO V Jan. 10-12, 2018 | RO NCR Jan. 24-26, 2018 | RO XII April 25-27, 2018 | RO X Dec. 5-7, 2018 | No.14 F1 RO VI(N.Occ.) Dec. 12-14, 2018 | No.15 FT RO II Jan. 9-11, 2019 |
| No. | Lecture Item Types of Bridge Defects, Causes and Repair Methods | No.8 F1 RO XIII Nov.7-9,2017 Mohammad Natino | No.9 F1 RO III Nov. 15-17,2017 Patrick Tolentino | No.10 F1 RO V Jan. 10-12, 2018 Ariel S. Amor | No.11 F1 RO NCR Jan. 24-26, 2018 Salvador Marc R. Botin | No.12 F1 RO XII April 25-27, 2018 Alvin Cabueñas | RO X Dec. 5-7, 2018 Bryan James Pitos | No.14 F1 RO VI(N.Occ.) Dec. 12-14, 2018 Jillian Rose Atinado | No.15 FT RO II Jan. 9-11, 2019 Bryan Nathaniel Cauilan |
| No. | Lecture Item Types of Bridge Defects, Causes and Repair Methods Repair of Concrete Superstructure and Substructure | No.8 F1 RO XIII Nov.7-9,2017 Mohammad Natino Alvin Cabueñas | No.9 F1 RO III Nov. 15-17,2017 Patrick Tolentino John Edel Dimarucut | No.10 F1 RO V Jan. 10-12, 2018 Ariel S. Amor Salvador Marc R. Botin | No.11 F1 RO NCR Jan. 24-26, 2018 Salvador Marc R. Botin Ariel S. Amor | No.12 F1 RO XII April 25-27, 2018 Alvin Cabueñas Algin T. Gingatan | Ro.13F1 RO X Dec. 5-7, 2018 Bryan James Pitos Renato Ranier Vitorio | No.14 F1 RO VI(N.Occ.) Dec. 12-14, 2018 Jillian Rose Atinado Paul Daniel Salas | No.15 FT RO II Jan. 9-11, 2019 Bryan Nathaniel Cauilan Dexter Cavaneyro |
| No. 1 2 3 | Lecture Item Types of Bridge Defects, Causes and Repair Methods Repair of Concrete Superstructure and Substructure Repair of Steel Superstructure and Substructure | No.8 F1 RO XIII Nov.7-9,2017 Mohammad Natino Alvin Cabueñas Irewill Flores | No.9 F1 RO III Nov. 15-17,2017 Patrick Tolentino John Edel Dimarucut Patrick Tolentino | No.10 F1 RO V Jan. 10-12, 2018 Ariel S. Amor Salvador Marc R. Botin Jumar O. Villamor | No.11 F1 RO NCR Jan. 24-26, 2018 Salvador Marc R. Botin Ariel S. Amor Dexter Cavaneyro | No.12 F1 RO XII April 25-27, 2018 Alvin Cabueñas Algin T. Gingatan Paul Daniel R. Salas | Ro. 13F1 RO X Dec. 5-7, 2018 Bryan James Pitos Renato Ranier Vitorio Rene Charles Supremo | No.14 F1 RO VI(N.Occ.) Dec. 12-14, 2018 Jillian Rose Atinado Paul Daniel Salas Paul Daniel Salas | No.15 FT RO II Jan. 9-11, 2019 Bryan Nathaniel Cauilan Dexter Cavaneyro Bryan Nathaniel Cauilan |
| No. 1 2 3 4 | Lecture Item Types of Bridge Defects, Causes and Repair Methods Repair of Concrete Superstructure and Substructure Repair of Steel Superstructure Repair of Expansion Joints, Bearings and Slope Protection | No.8 F 1 RO XIII Nov.7-9,2017 Mohammad Natino Alvin Cabueñas Irewill Flores Bryan James Pitos | No.9 F1 RO III Nov. 15-17,2017 Patrick Tolentino John Edel Dimarucut John Edel Dimarucut | RO V Jan. 10-12, 2018 Ariel S. Amor Salvador Marc R. Botin Jumar O. Villamor Salvador Marc R. Botin | NO.11 F 1 RO NCR Jan. 24-26, 2018 Salvador Marc R. Botin Ariel S. Amor Dexter Cavaneyro John Edel Dimarucut | RO XII April 25-27, 2018 Alvin Cabueñas Algin T. Gingatan Paul Daniel R. Salas Irewil Flores | No.13F1 ROX Dec. 5-7, 2018 Bryan James Pitos Renato Ranier Vitorio Rene Charles Supremo Rene Charles Supremo | No.14 F1 RO VI(N.Occ.) Dec. 12-14, 2018 Jillian Rose Atinado Paul Daniel Salas Paul Daniel Salas Noe Bonga | No.13 F1 RO II Jan. 9-11, 2019 Bryan Nathaniel Cauilan Dexter Cavaneyro Bryan Nathaniel Cauilan Dexter Cavaneyro |
| No. 1 2 3 4 5 | Lecture Item Types of Bridge Defects, Causes and Repair Methods Repair of Concrete Superstructure and Substructure Repair of Steel Superstructure and Substructure Repair of Expansion Joints, Bearings and Slope Protection Ist Batch of JICA Training Program in Japan : Results & Impressions | No.8 F 1 RO XIII Nov.7-9,2017 Mohammad Natino Alvin Cabueñas Irewill Flores Bryan James Pitos 2nd batch : Krezia L. Morales | No.9 F1 RO III Nov. 15-17,2017 Patrick Tolentino John Edel Dimarucut Patrick Tolentino John Edel Dimarucut 2nd batch : Irewill Flores | No.10 F1 ROV Jan. 10-12, 2018 Ariel S. Amor Salvador Marc R. Botin Jumar O. Villamor Salvador Marc R. Botin by 2nd batch Renato Rainer M. Vitorio | No.11 F1 RO NC2, 2018 Jan. 24-26, 2018 Salvador Marc R. Botin Ariel S. Amor Dexter Cavaneyro John Edel Dimarucut by 2nd batch Ivan Paul D. Vicera | No.12 F I RO XIII April 25-27, 2018 Alvin Cabueñas Algin T. Gingatan Paul Daniel R. Salas Irewil Flores by 2nd batch Irewil Flores | No.15F1 ROX Dec. 5-7, 2018 Bryan James Pitos Renato Ranier Vitorio Rene Charles Supremo Rene Charles Supremo by 3rd batch Bryan James Pitos | No.14 F 1 RO VI(Noc.) Dec. 12-14, 2018 Jillian Rose Atinado Paul Daniel Salas Paul Daniel Salas Noe Bonga by 3rd batch Jillian Rose Atinado | No.13 F1 RO II Jan. 9-11, 2019 Bryan Nathaniel Cauilan Dexter Cavaneyro Bryan Nathaniel Cauilan Dexter Cavaneyro by 3rd batch Mark Andrew L. Delgado |
| No. 1 2 3 4 5 6 | Lecture Item Types of Bridge Defects, Causes and Repair Methods Repair of Concrete Superstructure and Substructure Repair of Steel Superstructure and Substructure Repair of Expansion Joints, Bearings and Slope Protection Ist Batch of JICA Training Program in Japan : Results & Impressions Overview of the target Pilot Project Bridges | No.8 F 1 RO XIII Nov.7-9,2017 Mohammad Natino Alvin Cabueñas Irewill Flores Bryan James Pitos 2nd batch : Krezia L. Morales By Project Engineer | No.9 F1 ROIII Nov. 15-17,2017 Patrick Tolentino John Edel Dimarucut Patrick Tolentino John Edel Dimarucut 2nd batch : Irewill Flores Mary Anne D. Bucad | ROU F1 ROU Jan. 10-12, 2018 Ariel S. Amor Salvador Marc R. Botin Jumar O. Villamor Salvador Marc R. Botin by 2nd batch Renato Rainer M. Vitorio Salvador Marc R. Botin | No.11 F1 RO NC2, 2018 Jan. 24-26, 2018 Salvador Marc R. Botin Ariel S. Amor Dexter Cavaneyro John Edel Dimarucut by 2nd batch Ivan Paul D. Vicera By Project Engineer | No.12 F 1 RO XIII April 25-27, 2018 Alvin Cabueñas Algin T. Gingatan Paul Daniel R. Salas Irewil Flores by 2nd batch Irewil Flores By Project Engineer | No.1571 ROX Dec. 5-7, 2018 Bryan James Pitos Renato Ranier Vitorio Rene Charles Supremo Rene Charles Supremo by 3rd batch Bryan James Pitos Jessie Tutor | No.14 F 1 RO VI(NOcc.) Dec. 12-14, 2018 Jillian Rose Atinado Paul Daniel Salas Paul Daniel Salas Noe Bonga by 3rd batch Jillian Rose Atinado Raul De la Torre | No.13 F1 RO II Jan. 9-11, 2019 Bryan Nathaniel Cauilan Dexter Cavaneyro Bryan Nathaniel Cauilan Dexter Cavaneyro by 3rd batch Mark Andrew L. Delgado Rhett Willem P. Varilla |
| No. 1 2 3 4 5 6 7 | Lecture Item Types of Bridge Defects, Causes and Repair Methods Repair of Concrete Superstructure and Substructure Repair of Steel Superstructure and Substructure Repair of Expansion Joints, Bearings and Slope Protection 1st Batch of JICA Training Program in Japan : Results & Impressions Overview of the target Pilot Project Bridges Senior Engineer responsible for Lecture | No.8 F1 RO XIII Nov.7-9,2017 Mohammad Natino Alvin Cabueñas Irewill Flores Bryan James Pitos 2nd batch : Krezia L. Morales By Project Engineer Alvin Cabueñas | No.9 F1 ROIII Nov. 15-17,2017 Patrick Tolentino John Edel Dimarucut Patrick Tolentino John Edel Dimarucut 2nd batch : Irewill Flores Mary Anne D. Bucad Lecy Calma | No.10 F1 ROV Jan. 10-12, 2018 Ariel S. Amor Salvador Marc R. Botin Jumar O. Villamor Salvador Marc R. Botin by 2nd batch Renato Rainer M. Vitorio Salvador Marc R. Botin | No.11 F1 RONC2, 2018 Jan. 24-26, 2018 Salvador Marc R. Botin Ariel S. Amor Dexter Cavaneyro John Edel Dimarucut by 2nd batch Ivan Paul D. Vicera By Project Engineer James Surrot | No.12 F1 RO XIII April 25-27, 2018 Alvin Cabueñas Algin T. Gingatan Paul Daniel R. Salas Irewil Flores by 2nd batch Irewil Flores By Project Engineer James Surrot | No.15F1 RO.3 Dec. 5-7, 2018 Bryan James Pitos Renato Ranier Vitorio Rene Charles Supremo Rene Charles Supremo by 3rd batch Bryan James Pitos Jessie Tutor Jessie Tutor | No.14 F 1 RO VI(NOcc) Dec. 12-14, 2018 Jillian Rose Atinado Paul Daniel Salas Paul Daniel Salas Noe Bonga by 3rd batch Jillian Rose Atinado Raul De la Torre | No.13 F1 RO II Jan. 9-11, 2019 Bryan Nathaniel Cauilan Dexter Cavaneyro Bryan Nathaniel Cauilan Dexter Cavaneyro by 3rd batch Mark Andrew L. Delgado Rhett Willem P. Varilla James Surrot |

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 Posttraining surveys

JICA team evaluated understanding level of Seminars/OJTs participants by Pre- and Posttraining 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.





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.

<u>Achievements</u>

- 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.

| 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) |

Table 2.1.4.1-1 Monitoring Schedule





Recognize the importance of keep Quality for Share Repair information

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



(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.

| 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 |
| | Activity 1: 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 | Total Php 54.44 million for all Regions |
| (CY2019-2020) | |

(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.

| No. | Submission Date of | PDM Modification | Version No. of the |
|-----|---------------------------------|--|-----------------------|
| | Monitoring Sheets | | PDM |
| 1 | March 31, 2016 (1st JCC) | Addition of Counterpart personnel from <u>NIR</u> office. Modification of Activities 2-4; Monitor and evaluate situations of bridge maintenance<u>and</u> engineering inspections by ROs/DEOs. | 1 |
| 2 | September 27, 2016 (2nd JCC) | Addition of Activities 1-1; <u>Recommended</u> <u>List of Equipment/Tools for road</u> <u>maintenance.</u> Addition of Activities 2-1; <u>Recommended</u> <u>List of Equipment/Tools for bridge</u> <u>maintenance.</u> Addition of Activities 2-2; <u>Bridge Condition</u> <u>Data Review and Bridge Engineering</u> <u>Inspection.</u> Addition of <u>Counterpart personnel from</u> <u>Non-Pilot Regional Offices (I, IV-A, IV-B,</u> V, VI, IX, X and XII) | 2 |
| 3 | 30 March, 2017 (3rd JCC) | - Addition of Counterpart personnel from <u>NCR</u> as Non-Pilot Regional Office. | 3 |
| 4 | 10 October, 2017 (4th JCC) | Addition of Activities 1-2; <u>Conduct</u> <u>condition inspection of road slope protection</u> <u>in CAR using drone technology</u> Addition of Activities 3-3; <u>Conduct</u> <u>condition inspection of special bridges in</u> <u>RO-II and RO-XIII using drone technology</u> Addition of Input from Japanese side; <u>Video</u> <u>recording of Project activities</u> Addition of Input from Japanese side; <u>Invitation to Observation Trip for the Road</u> <u>& Bridge Maintenance in Japan</u> | 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 |
| | IICA Experts |
| No /Date/No. of Attendees | 1 st ICC: March 31, 2016 / 56 |
| | 2^{nd} ICC: September 30, 2016 / 39 |
| | 2 rd ICC: March 5, 2017 / 41 |
| | f^{th} ICC: October 10, 2017 / 38 |
| | 4 JCC. October 10, $2017/38$ 5th ICC: April 2 2018/28 |
| | 5° JCC. April 5, 2010 / 30 |
| | 6 th JCC: August 7, 2018 / 48 |
| DI | / ^a JCC: February 1, 2019/55 |
| Photos | DPWH DPWH DPWH DPWH H DPWH DPWH DPWH DPWH |
| | |

Figure 4.1-1 Record of JCC Meetings

| 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 | 1 st TWG: December 8,2017 / 19 |
| | 2 nd TWG: January 24, 2018 /23 |
| | 3 rd TWG: April 4, 2018 / 13 |
| Photo | |

4.2 Record of Technical Working Group (TWG) Meeting

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 | 1 st MM: April 26, 2016 / 24 | | | | | | | |
| | 2 nd MM: May 16, 2016 / 8 | | | | | | | |
| | 3 rd MM: July 5, 2016 / 9 | | | | | | | |
| | 4 th MM: August 18, 2016 / 9 | | | | | | | |
| | 5 th MM: September 12, 2016 / 9 | | | | | | | |
| | 6 th MM: November 17, 2016 / 13 | | | | | | | |
| | 7 th MM: December 16, 2016 / 17 | | | | | | | |
| | 8 th MM: February 9, 2017 / 18 | | | | | | | |
| | 9 th MM: March 15, 2017 / 20 | | | | | | | |
| | 10 th MM: May 26, 2017 / 17 | | | | | | | |
| | 11 th MM: July 4, 2017 / 17 | | | | | | | |
| | 12 th MM: August 25, 2017 / 24 | | | | | | | |
| | 13 th MM: September 13, 2017 / 18 | | | | | | | |
| | 14 th MM: October 10, 2017 / 21 | | | | | | | |
| | 15 th MM: November 13, 2017 / 8 | | | | | | | |
| | 16 th MM: December 8, 2017 / 19 | | | | | | | |
| | 17 th MM: January 17, 2018 / 17 | | | | | | | |
| | 18 th MM: February 20, 2018 / 16 | | | | | | | |
| | 19 th MM: April 3, 2018 / 19 | | | | | | | |
| | 20 th MM: May 2, 2018 / 17 | | | | | | | |

| | 21 st MM: June 19, 2018 / 19 | | | | | | |
|--------|---|--|--|--|--|--|--|
| | 22 nd MM: July 17, 2018 / 14 | | | | | | |
| | 23 rd MM: August 7, 2018 / 15 | | | | | | |
| | 24 th MM: October 3, 2018 / 37 | | | | | | |
| | 25 th MM: November 15, 2018 / 12 | | | | | | |
| | 26 th MM: December 7, 2018 / 23 | | | | | | |
| | 27 th 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 Meeti | ngs 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 | 1 st CWG: August 12, 2016 / 11 | | | | | |
| | 2 nd CWG: September 16, 2016 / 12 | | | | | |
| | 3 rd CWG: November 28, 2016 / 11 | | | | | |
| | 4 th CWG: December 16, 2016 / 10 | | | | | |
| | 5 th CWG: February 21, 2017 / 15 | | | | | |
| | 6 th CWG: April 21, 2017 / 19 | | | | | |
| | 7 th CWG: April 17, 2017 / 17 | | | | | |
| | 8 th CWG: October 20, 2017 / 9 | | | | | |
| | 9 th CWG: November 16, 2017 / 7 | | | | | |
| | 10 th CWG: December 7, 2017 / 14 | | | | | |
| | 11th CWG: January 17, 2018 / 22 | | | | | |
| | 12 th CWG: July 10, 2018 / 10 | | | | | |
| | 13 th CWG: July 30, 2018 / 9 | | | | | |
| | 14 th 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 | 1 st CWG: April 26, 2016 / 12 | | | | | |
| | 2 nd CWG: August 8, 2016 / 13 | | | | | |
| | 3 rd CWG: November 17, 2016 / 16 | | | | | |
| | 4 th CWG: January 9, 2017 / 17 | | | | | |
| | 5 th CWG: April 25, 2017 / 20 | | | | | |
| | 6 th CWG: August 15, 2017 / 14 | | | | | |
| | 7 th CWG: October 30, 2017 / 7 | | | | | |
| | 8 th CWG: November 21, 2017 / 13 | | | | | |
| | 9 th CWG: January 23, 2018 / 21 | | | | | |
| | 10 th CWG: March 15, 2018 / 11 | | | | | |
| | 11 th CWG: May 22, 2018 / 18 | | | | | |
| | 12 th CWG: October 9, 2018 / 11 | | | | | |
| | 13 th CWG: November 16, 2018 / 18 | | | | | |
| | 14 th CWG: December 4, 2018 / 13 | | | | | |
| | 15 th 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 | 1 st CWG: May 16, 2016 / 6 | | | | | | | |
| | 2 nd CWG: June 9, 2016 / 13 | | | | | | | |
| | 3 rd CWG: August 2, 2016 / 20 | | | | | | | |
| | 4 th CWG: August 9, 2016 / 15 | | | | | | | |
| | 5 th CWG: August 31, 2016 / 13 | | | | | | | |
| | 6 th CWG: November 22, 2016 / 24 | | | | | | | |
| | 7 th CWG: December 16, 2016 / 12 | | | | | | | |
| | 8 th CWG: February 9, 2017 / 19 | | | | | | | |
| | 9 th CWG: March 30, 2017 / 13 | | | | | | | |
| | 10 th CWG: May 24, 2017 / 25 | | | | | | | |
| | 11 th CWG: July 5, 2017 / 23 | | | | | | | |
| | 12 th CWG: July 12, 2017 / 28 | | | | | | | |
| | 13 th CWG: September 14, 2017 / 6 | | | | | | | |
| | 14 th CWG: September 19, 2017 / 6 | | | | | | | |
| | 15 th CWG: September 22, 2017 / 5 | | | | | | | |
| | 16 th CWG: September 26, 2017 / 4 | | | | | | | |
| | 17 th CWG: September 28, 2017 / 5 | | | | | | | |
| | 18 th CWG: October 11, 2017 / 13 | | | | | | | |

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

4.4.4 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 | 1 st CWG: September 6, 2016 / 12 | | | | | |
| | 2 nd CWG: November 21, 2016 / 8 | | | | | |
| | 3 rd CWG: March 8, 2017 / 9 | | | | | |
| | 4 th CWG: July 3, 2017 / 13 | | | | | |
| | 5 th CWG: July 24, 2017 / 9 | | | | | |
| | 6 th CWG: October 9, 2017 / 10 | | | | | |
| | 7 th CWG: December 4, 2017 / 25 | | | | | |
| | 8 th CWG: February 19, 2018 / 7 | | | | | |
| | 9 th CWG: April 4, 2018 / 15 | | | | | |
| | 10 th CWG: July 10, 2018 / 6 | | | | | |
| | 11 th CWG: August 6, 2018 / 5 | | | | | |
| | 12 th CWG: October 24, 2018 / 6 | | | | | |

| Table 4.4.4-1 Record of CWG Meetings on Database Syster | WG Meetings on Database System |
|---|--------------------------------|
|---|--------------------------------|

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

| Da | te | | Time | | Program | Lecturer |
|--------|------|-------|--------|-------|--|-----------------------|
| 1-Nov | Tue | | | | Arrival in Japan | |
| 2-Nov | Wed | 10:00 | \sim | 12:30 | Briefing | |
| | | 14:00 | \sim | 14:30 | Program Orientation | Nippon Engineering |
| | | | | | | Consultants Co., Ltd. |
| | | 15:00 | \sim | 17:00 | Lecture on Bridge Maintenance | Ministry of Land, |
| | | | | | Management in Japan | Infrastructure, |
| | | | | | | Transport and |
| | | | | | | Tourism |
| | | 15:00 | \sim | 17:00 | Lecture on Bridge Maintenance | Nippon Engineering |
| | | | | | Management in Japan | Consultants Co., Ltd. |
| 3-Nov | Thu | 10:30 | \sim | 12:30 | Visit to the Construction Site of | Takigami Steel |
| | | | | | Meiko Nishi Bridge Seismic | Construction |
| | | | | | Strengthening Work | |
| | | 14:00 | \sim | 14:30 | Introduction of Takigami Main Plant | Takigami Steel |
| | | | | | and Lecture on How to Fabricate the | Construction |
| | | | | | Steel Bridge | - |
| | | 14:30 | \sim | 16:30 | Takigami Main Plant Tour | |
| 4-Nov | Fri | 10:00 | \sim | 11:00 | NIPPO Okazaki Mixture Plant Tour | NIPPO Corporation |
| | | 13:30 | \sim | 14:30 | Lecture on Recycled Asphalt Mixing | |
| | | | | | Plant | |
| | | 14:30 | \sim | 16:00 | Lecture on Maintenance/Repair and | |
| | | | | | Pavement Technologies of Asphalt | |
| | | | | | Concrete Pavement | |
| | | 16:00 | \sim | 17:00 | Lecture on Pavement Repair and | TAC Corporation |
| | | | | | Demonstration of Crack Injection | |
| 5-Nov | Sat | | | | | |
| 6-Nov | Sun | | | | | |
| 7-Nov | Mon | 9:30 | \sim | 11:00 | Visit to the Construction Site of | NITTOC |
| | | | | | Kawanishi Interchange (Slope | Construction Co.,Ltd. |
| | | 12.00 | | 15.00 | Protection) | |
| | | 15:00 | \sim | 15:00 | Visit to the Construction Site of Left | |
| | | | | | Bank Slope Protection of Algawa | |
| | | 16:00 | - | 17:00 | Dalli Visit to the Site of Slope Disester | |
| | | 10:00 | \sim | 17:00 | Picovery Construction Using | |
| | | | | | Geofiber Method at Kiyomizu | |
| | | | | | Temple | |
| 8-Nov | Tue | 9.15 | \sim | 10.30 | Observation : Akashi Kaikyo Bridge | Honshu-Shikoku |
| 0 1107 | Tue | 7.15 | - | 10.50 | Exhibition Center | Bridge Expressway |
| | | 10:30 | \sim | 11:10 | Lecture on Bridge Maintenance | CoLtd. |
| | | 10100 | | | Management in Honshu-Shikoku | |
| | | | | | Bridge Expressway Co., Ltd. | |
| | | 13:15 | \sim | 14:30 | Observation : Akashi Kaikyo | |
| | | | | | Bridge (walk on the maintenance | |
| | | | | | path in the girder and go up on the | |
| | | | | | ton) | |
| 9-Nov | Wed | 9.30 | \sim | 10.00 | Introduction of Taibeivo Materials | Taiheivo Materials |
| 21101 | ,,eu | 7.50 | - | 10.00 | Corporation | Corporation |

Table 4.5.1-1 Schedule of 1st Batch

| | | 10.00 | 1 | 11.20 | | |
|--------|-----|-------|--------|-------|-------------------------------------|-----------------------|
| | | 10:00 | \sim | 11:30 | Lecture on Bridge Repair Materials | |
| | | 14:00 | \sim | 14:30 | Introduction of Alpha Kogyo K.K. | Alpha Kogyo K.K. |
| | | | | | and Bridge Repair Materials | |
| | | 14:30 | \sim | 15:30 | Product Testing in Laboratory | |
| | | 15:30 | \sim | 16:00 | Visit to the Project Site Using | |
| | | | | | ALPHATEC Products | |
| 10-Nov | Thu | 11:00 | \sim | 11:20 | Introduction of Overview of the | NEXCO-East Group |
| | | | | | Technical Training Center | Technical Training |
| | | 11:20 | \sim | 12:20 | Lecture on Inspection and Repair | Center |
| | | | | | Methods of Bridge | |
| | | 13:00 | \sim | 14:30 | Facility Tour (Civil | |
| | | | | | Engineering/Facilities Engineering) | |
| | | 15:00 | \sim | 16:30 | Practical Training of Bridge | |
| | | | | | Inspection @ Gomyo Bridge Training | |
| | | | | | Site | |
| 11-Nov | Fri | 10:30 | \sim | 11:00 | Observation : Construction Site of | Asahi Kasei Advance |
| | | | | | Yamba Dam | Corporation |
| | | 11:15 | \sim | 11:45 | Observation : Project Site of Road | |
| | | | | | Slope Protection on NH145 | |
| | | 13:15 | \sim | 13:45 | Observation : Project Sites of Road | |
| | | | | | Slope Protection on NH292 | |
| | | 14:00 | \sim | 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 | \sim | 11:50 | Lecture on Road Pavement | Public Works |
| | | | | | Maintenance Management | Research Institute |
| | | 13:10 | \sim | 14:30 | Lecture on Maintenance Management | |
| | | | | | of Concrete Bridge | |
| | | 14:45 | \sim | 15:10 | Facility Tour (Pavement Test Field) | |
| | | 15:15 | \sim | 15:40 | Facility Tour (Storage for Removed | |
| | | | | | Materials for Clinical Research) | |
| | | 15:45 | \sim | 16:10 | Facility Tour (Structural Dynamics | |
| | | | | | Laboratory /Wheel Running | |
| | | | | | Machine) | |
| 15-Nov | Tue | 8:00 | \sim | 12:00 | Preparation for Action Plan | |
| | | 13:00 | \sim | 15:00 | Action Plan Presentation Evaluation | JICA Tokyo |
| | | | | | Meeting on the Training Course and | Nippon Engineering |
| | | | | | Closing Ceremony | Consultants Co., Ltd. |
| 16-Nov | Wed | | | | Leave to Manila | |



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

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

Table 4.5.2-1 Schedule of 2nd Batch
| | | 13:00 | ~ | 16:00 | Product Demonstration in Laboratory Visit to the Project Site Using | |
|--------|-----|-------|--------|-------|---|--|
| | | | | | ALPHATEC Products | |
| | | 16:20 | \sim | 16:50 | Visit to the Project Sites Using ALPHATEC Products | |
| 21-Sep | Thu | 11:00 | \sim | 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 | \sim | 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 | \sim | 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 | \sim | 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 | \sim | 10:00 | Lecture on Rokko Sabo Office Explanation of Outline of Work | Rokko Sabo Office, Ministry of Land, |
| | | 10:00 | \sim | 10:30 | Facility Tour : Model Experiment of Debris Flow | Infrastructure, Transport and Tourism |
| | | 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 | \sim | 11:00 | Lecture on Bridge Repair Technology | TORAY Industries, Inc. |
| | | 13:25 | \sim | 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 | \sim | 11:00 | Observation : Akashi Kaikyo Bridge Exhibition Center | |
| | | 11:30 | \sim | 12:10 | Observation : Traffic Operations Center | 1 |
| | | 13:45 | \sim | 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) Practical Training of Nondestructive | Kawada Industries, Inc. |
| | | | | | Testing Shimanami Kaido Expressway | Nippon Engineering |
| | | | | | (Kurushima SA, Setoda PA, Ohama PA) | 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 | \sim | 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 | \sim | 14:30 | Hiroshima Peace Memorial Museum Hiroshima's Atomic Bomb Dome Itsukushima Shrine on Miyajima | Nippon Engineering Consultants Co., Ltd. |
| 1-Oct | Sun | | | | Data-compiling, Preparation for Action Plan | |
| 2-Oct | Mon | 10:30 | \sim | 11:50 | Lecture on Road Pavement Maintenance Management | Public Works Research Institute |
| | | 13:10 | \sim | 14:30 | Lecture on Maintenance Management of Bridge | |
| | | 14:45 | \sim | 15:10 | Facility Tour : Pavement Test Field | |
| | | 15:15 | ~ | 15:40 | Facility Tour : Storage for Removed Materials for Clinical Research | |
| | | 15:45 | \sim | 16:10 | Facility Tour : Embankment Test Field | |
| 3-Oct | Tue | 9:00 | \sim | 12:00 | Preparation for Action Plan | |
| | | 13:00 | \sim | 14:00 | Action Plan Presentation | JICA |
| | | 14:00 | \sim | 14:30 | Evaluation Meeting on the Training Course and Closing Ceremony | Nippon Engineering Consultants Co., Ltd. |
| 4-Oct | Wed | | | | Leave to Manila | |





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

| 6-Sep | Thu | 13:00 | \sim | 14:00 | Lecture on Actual Status of Bridge Maintenance Management in | Nagasaki Prefecture |
|--------|------|--------|--------|-------|---|-----------------------|
| | | | | | Nagasaki Prefecture | |
| | | 14:45 | \sim | 15:45 | Observation : Iojima Bridge (3-span | |
| | | | | | continuous steel deck curved box | |
| 7.0 | E. | 0.00 | | 10.00 | girder) | No 1 Dec Contone |
| /-Sep | Ffl | 9:00 | \sim | 10:00 | staved bridge) | Nagasaki Prefecture |
| | | 11.20 | - | 12.20 | Observation : Saikai Bridge (Steel | - |
| | | 11.50 | \sim | 12.30 | braced rib arch) | |
| | | 14.00 | \sim | 15.00 | Observation : Oshima Bridge (Steel | - |
| | | 1 | | 15.00 | cable-staved bridge) | |
| 8-Sep | Sat | 9:30 | \sim | 10:30 | Nagasaki Atomic Bomb Museum | |
| F | ~ | 11.00 | \sim | 11.30 | Dejima Main Gate Bridge Dejima | - |
| | | 11:40 | \sim | 11.50 | Megane Bridge | - |
| 9-Sen | Sun | 11.10 | | 12.00 | Observation : Suirokaku (a high-rise | |
| 9-3Cp | Sull | 11.20 | | 12.00 | waterway structure) / Nanzen-ii | |
| | | | | | Temple | |
| | | 12:30 | \sim | 13:20 | Kinkakuji Temple | |
| 10-Sep | Mon | 9.15 | \sim | 10.15 | Lecture on Bridge Maintenance | Honshu-Shikoku |
| 10 S P | | 2.10 | | 10110 | Management in Honshu-Shikoku | Bridge Expressway |
| | | | | | Bridge Expressway Co., Ltd. | Co.,Ltd. |
| | | 10:45 | \sim | 11:25 | Observation : Traffic Operations | , í |
| | | | | | Center | |
| | | 13:10 | \sim | 14:40 | Visit and go up on the top of Akashi | |
| | | | | | Kaikyo Bridge | |
| | | | | | (walk on the maintenance path in the | |
| | | 1.5.00 | | | bridge girder) | |
| | | 15:00 | \sim | 16:00 | Observation : Nojima Fault | Nippon Engineering |
| 11.0 | T | 12.20 | | 14.00 | Preservation Museum | Consultants Co., Ltd. |
| 11-Sep | Tue | 15:50 | \sim | 14:00 | Kawada Industrias Inc | Kawada Industries, |
| | | 14.00 | ~ | 16.30 | Plant Tour (Manufacture of girder | Inc. |
| | | 14.00 | | 10.50 | and SC deck) | |
| 12-Sep | Wed | 9.00 | \sim | 9.30 | Lecture on Maintenance Management | |
| 12 S P | ea | 2.00 | | 1.00 | of Shinminato Bridge | |
| | | 10:00 | \sim | 11:00 | Observation : Shinminato Bridge | |
| | | | | | (Cable-stayed bridge) | |
| 13-Sep | Thu | 9:30 | \sim | 10:50 | Introduction of Overview of the | NEXCO-East Group |
| | | | | | Technical Training Center | Technical Training |
| | | | | | Lecture on Inspection and Repair | Center |
| | | | | | Methods of Bridge | |
| | | 11:00 | \sim | 12:00 | Facility Tour (Civil | |
| | | 12.00 | | 14.20 | Engineering/Facilities Engineering) | - |
| | | 13:00 | \sim | 14:30 | Practical Training of Bridge | |
| 14 San | Eri | 0.00 | - | 12.00 | Propagation for Action Dian | |
| 14-Sep | FII | 9.00 | \sim | 12:00 | Action Dion Dressentation | Ionon Internetic 1 |
| | | 13:00 | \sim | 14:00 | Action Plan Presentation | Cooperation A concy |
| | | 14:00 | \sim | 14:30 | Evaluation Meeting on the Training | Ninnon Engineering |
| | | | | | Course and Closing Ceremony | Consultants Co., Ltd |
| 15-Sep | Sat | | 1 | | Leave to Manila | |



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

| Da | te | Time Program | | | | |
|--------|-----|--------------|--------|-------|--------------------------------------|-----------------------|
| 15-Oct | SUN | | | | Arrival in Japan | |
| 16-May | MON | 9:30 | \sim | 10:00 | Courtesy call JICA | JICA Tokyo |
| | | 10:40 | \sim | 11:00 | Courtesy call MLIT | Ministry of Land. |
| | | | | | | Infrastructure, |
| | | | | | | Transport and Tourism |
| | | 13:30 | \sim | 14:30 | National Highway Route 357 Tokyo | MLIT Kanto Regional |
| | | | | | Port Tunnel | Development Bureau |
| | | | | | Construction / Maintenance | Kawasaki National |
| | | | | | | Highway Office |
| | | 15:00 | \sim | 16:00 | | MLIT Kanto Regional |
| | | | | | | Development Bureau |
| | | | | | | Tokyo National |
| | | | | | | Highway Office |
| 17-May | TUE | 10:00 | \sim | 11:00 | Introduction of MLIT Kanto | MLIT Kanto |
| | | | | | Technical Office | Technical Office |
| | | | | | Observation : Maintenance | MLIT Kanto Regional |
| | | | | | Equipment | Development Bureau |
| | | | | | | Tokyo National |
| | | | | | | Highway Office |
| | | 13:40 | \sim | 14:40 | Introduction of Road Zipper | East Nippon |
| | | 15:00 | \sim | 16:00 | Observation : Moriya SA (Disaster | Expressway Company |
| | | | | | Prevention) | Limited |
| | | 16:30 | \sim | 17:30 | Demonstration of Road Zipper | |
| 18-May | WED | 12:30 | \sim | 14:30 | Observation : Maintenance | HANTA |
| | | | | | Equipment | MACHINERY Co.,Ltd |
| | | 15:30 | \sim | 17:00 | Observation : Construction | Komatsu Ltd. |
| 10.0 | | 10.00 | | 1 | Equipment | |
| 19-Oct | THU | 10:00 | \sim | 12:00 | Courtesy call | Hanshin Expressway |
| | | | | | Discussion about Road Maintenance | Company Limited |
| | | | | | Introduction and Discussion about | |
| | | 12.20 | | 14.20 | Expressway Renewal Project | - |
| | | 15:50 | \sim | 14:50 | Equipment (Pood sweepers) | |
| | | 15:00 | - | 16.20 | Observation : Kobs Farthquaka | - |
| | | 15.00 | | 10.50 | Museum | |
| | | 17.00 | ~ | 17.15 | Observation : Hanshin Expressway | - |
| | | 17.00 | | 17.15 | (Highway that goes through a | |
| | | | | | Ruilding) | |
| 20-Oct | FRI | 10.00 | \sim | 11.00 | Courtesy call | Honshu-Shikoku |
| 20 000 | 110 | 10.00 | | 11.00 | Discussion about Maintenance | Bridge Expressway |
| | | | | | Management | Co.,Ltd. |
| | | | | | Introduction of Bridge Maintenance | , |
| | | | | | Management in Honshu-Shikoku | |
| | | | | | Bridge Expressway Co., Ltd. | |
| | | 11:40 | \sim | 12:10 | Observation : Akashi Kaikyo Bridge | |
| | | | | | Exhibition Center | |
| | | 12:40 | \sim | 13:20 | Traffic Operations Center | |
| | | | | | Observation : Maintenance | |
| | | | | | Equipment | |
| | | | | | Introduction of Maintenance of | |
| | | 14.17 | | 16.00 | Tunnel | - |
| | | 14:45 | \sim | 16:30 | Visit and go up on the top of Akashi | |
| | | | | | Kaikyo Bridge (walk on the | |
| | | | | | maintenance path in the bridge | |
| 1 | 1 | 1 | 1 | 1 | giluer) | 1 |

Table 4.5.3-1 Japan Invitation

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



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) | |
| 10-Dec | Sull | Singapore 1630- Phnom Penh 1725 (MI608) | |
| 11 Dec | Mon | Courtesy call (JICA office) | JICA-Office |
| II-Dec | WIOII | Courtesy call (MPWT) | • MPWT |
| | | Site Visit | |
| | | Tsubasa Bridge | Japan ODA project |
| 12-Dec | Tue | Bridge Repair Project | Pilot Project |
| | | Charoy Changwar Bridge | (Bridge Repair) |
| | | Phnom Penh - SihanoukVille | |
| 13-Dec | Wed | Bridge Maintenance Workshop (ME Training) | |
| 15-Dec | weu | Lecture | |
| | | Bridge Maintenance Workshop (ME Training) | |
| 14-Dec | Thu | Lecture | |
| | | SihanoukVille - Phnom Penh | |
| | | JICA Cambodia office | JICA-Office |
| 15-Dec | Fri | MPWT | • MPWT |
| 15-Dec | 1 11 | | |
| | | Phnom Penh1335-Siem Reap 1430 (K6109) | |
| 16-Dec | Sat | Siem Reap 1550- Singapore 1920 (MI615) | |
| 17-Dec | Sun | Singapore 0020-Manila 0355 (PR510) | |



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.

| 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. |

Table 1.1.1-1 DAC Evaluation Criteria

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.

- 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.





(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 | Target Future Bridge Conditions after TCP III |
|------|---|--|-------------------------|--|
| 2016 | 86.64 | 13.36 | 7,071 | 20.00 |
| 2017 | 89.95 | 10.05 | 7,430 | 10.00 |
| 2018 | 93.45 | 6.55 | 7,793 | 2016 2017 2018 2019 2020 2021 |
| 2019 | 95.45 | 4.55 | 9,070 | |
| 2020 | 97.45 | 2.55 | 9,801 | Sor Bridges in Good and Pair Condition |
| 2021 | 99.45 | 0.55 | 10,532 | A distance of the second second for Parallel Pasessine in contribution |

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.



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 nonfunctional 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

| Group | Members | Names | Group | Members | Names | Group | Members | Names |
|---|-------------------------------|---|---------------------------|--|---|---|---|---|
| As of January 2018 | • | | | | | | | |
| | Proj. Mgr. (BOC) | Aristarco M. Doroy | | RO XI (MD-Team leader, TWG) | Rowena P. Jamito | | NCR | |
| | Dep. Proj. Mgr. (BOM) | Ma. Visna N. Manio | | RO II (PDD) | Rhett Willem P. Varilla | | 1. (MD-New) for Road Maint. / Road Slope | Maria Kristina S. Tomagan |
| | Planning Service (PS) | Nenita R. Jimenez | , | R III (MQCHD) | Violeta T. Liwanag | | 2. (PDD-New) Br. Repair, NDT, Inspection, Spl. Bridge | Ariel S. Amor |
| Technical | BOD | Edwin C. Matanguihan | | RO VII (MD) | Rosario C. Calves | | | |
| Working Group | BOM | Leofila SF Borlongan | 0.40 | | Adelina P. Gomez | | I. (MD-New) for Road Maint. / Road Slope | Mark Erik D. Madrigal |
| (2 now) | Regional Area Manager CAR | Elsa I. Naboye Recorrio C. Colvec | CWG - Team for Special | | Elsa T. Naboye Bryon Nathanial Cauilan | | 2. (PDD-New) Br. Repair, NDT, Inspection, Spi. Bridge | Dexter L. Cavaneyro |
| (Z HEW) | Regional Area Manager XI | Rowens P. Jamito | Bridges | | Bryan Nathaniel Gaulian Recy I. Calma | Counterparts from | 1 (MD-New) for Road Maint / Road Slope | Conrad Joseph Perez |
| | Project Coordinator (PS) | Ma Soledad Q Balisi | (CWG-SB) | RO VII (MD) | Fitsgerald R Icamen(Retired) | Non-Pilot Regions | 2 (PDD-New) Br Repair NDT Inspection Sol Bridge | Jane F. Cruz/Ruel S. Casimiro |
| | BQS (New) | Carlos P. Ebora | Total: 17 | RO XIII (MD) | Ruel M. Nazareno | | RO IV-B | |
| | BRS (New) | Ezekiel L. Bravo* | (6 new) | RO XIII (QAHD) | Danilo C. Pioquinto | | 1. (MD-New) for Road Maint. / Road Slope | Mark Jerome C. Limpiado/Oliver P. Mauleon |
| | | | | PS | Justino Jaime T. Surot, Jr. | | 2. (PDD-New) Br. Repair, NDT, Inspection, Spl. Bridge | Montrexis T. Tamayo/Calvin D. Cadata |
| | • | | | RO II (PDD-New) | Bryan Nathaniel Cauilan | Additional New (24) | RO V | |
| | IMS (New) | Egan Louis J. Fajardo | | RO III (CD-New) | Kenneth Edward T. Fernando | | 1. (MD-New) for Road Maint. / Road Slope | Sergio C. Uy/Patrick Daniel B. Salcedo |
| CWG -Data Base | BOM (New) | Pastor G. Padre, Jr. | | RO VII (Cebu 6th DEO, PDS-Nev | w) | | 2. (PDD-New) Br. Repair, NDT, Inspection, Spl. Bridge | Salvador Marc R. Botin |
| System | BOD (New) | No Member since June 2018 | | RO VII (Cebu 6th DEO, MS-Ne | w) Nelson B. Comedia | | | |
| (CWG-DBS) | BOG (New) | Mari Anne B. Valencia | | RO VIII (CD-New) | | - | 1. (MD-New) for Road Maint. / Road Slope | Victor P. Diomo |
| (9 new) | PS (New) BO VII (-New) | Norberto A. Gailan Jr. | , <u> </u> | RO XIII (New) | Irewill D. Flores | 4 | 2. (PDD-New) Br. Repair, NDT, Inspection, Spi. Bridge | Jillian Rose D. Atinado/ Nester John F. Cagay |
| (J Hew) | RO VII (PDD-New) | Edgardo M. Bascug | | BOC (Team leader, TWG membe | r) Aristarco M Dorov | 1 | 1 (MD-New) for Road Maint / Road Slope | Mohammad Riduan L. Natino |
| | RO VII (DAHD-New) | Madell April C. Aldea | | | Elsa T. Nabove | | 2 (PDD-New) Br Repair NDT Inspection Spl Bridge | Jeric Vincent T. Ruiz |
| RO VII (CD-New) RO XI (MD-New) | Fraella Marie O. Dorov | | PS DPD | Justino Jaime T Surot Jr | | RO X | | |
| | Edgardo L. Pioguinto | | PS. DPD | Emmanuel A. Adriano (In-Active Promoted) | | 1. (PDD-New) for Road Maint, / Road Slope | Revmark Anthony C. Basco/Vanessa Grace T. Dolloso | |
| | CAR (CD-New) | Alfredo D. Bannagao III | Pilot Projects | BOM (UPMO) | Ernante S. Antonio | | 2. (PDD-New) Br. Repair, NDT. Inspection, Spl. Bridge | Rene Charles C. Supremo |
| | | | Monitoring Team - | CAR MD | Ruth S. Duyo | | 3. (PDD-New) Br. Repair, NDT, Inspection, Spl. Bridge | Jessie R. Tutor |
| | | | Luzon Area | RO II (PDD) | Bryan Nathaniel Cauilan | | RO XII | |
| | • | | Total: 12 | RO II (PDD) | Rhett Willem P. Varilla | | 1. (PPD-New) for Road Maint. / Road Slope | Deomark A. Hedra |
| | RO XI MD | Rowena P. Jamito | (4 new) | BOM (New) | Mark Andrew L. Delgado | | 2. (PDD-New) Br. Repair, NDT, Inspection, Spl. Bridge | Paul Daniel R. Salas/ |
| BOM | BOM | Vincent Andrew D. Amores | | CAR (PDD-New) | Wilmer T. Takinan | | | |
| OWO | | Ruth S. Duyo | | RO II (MD-New) | Libe Edd Discourse | Additional Counterparts | s as requested by RD POL M. DELOS SANTOS Region | NIII |
| Toom for Road Maint / | | Ma. Ysobel Suzette G. Platos | , | RO III (PDD-New) | John Edel Dimarucot | | Special Bridge (D. Macapagal Cable Stayed Bridge) Bridge Repair & Read Slape | Bornio C. Hilorio-Engr. II Maintenance Division |
| Road Slope | BOM (LIPMO) | Ersante S. Antonio | · | RO VII MD (Team Leader) | Bosario S. Calves | 1 | Bridge Repair & Road Slope | Bernie G. Tillario Eligi. II PDD |
| (CWG-RRS) | | Rosario S. Calves | | RO VII (MQCHD) | Vicente R Valle Jr | | | |
| | RO XI MD | Elsa G. Grumo | Pilot Projects | RO VII (PDD) | Fraella Marie O. Doroy | | | |
| Total: 14 | RO VIII (MD) | Theresa A. Duero | Monitoring Team - | NIR | Feliciano R. Espina (In-Active) | | | |
| (6 new) | PS | Emmanuel A. Adriano (In-Active Promoted) | Visayas Area | RO III (PDD) | Recy L. Calma | | | |
| | BOM (New) | Krezia L. Morales | Total: 9 | RO VIII (MQCHD) | Adelina P. Gomez | - | | |
| | BOC (New) | Yvan Paul D. Vicera | (3 new) | RO VIII (PDD) | Liberato T. Homeres | - | | |
| | | Alvin Clark M. Dulnuan | | RO VII -1 (CD-New) | Vincent Montrix O. Galapre | | | |
| | RU VII (PDD-New) | Fraella Marie U. Doroy | | RO VIII - I (MD-New) | Jumar O. Villamor | | | |
| <u> </u> | | Rowena P Jamito | | | | | | |
| | PS DPD BMS | Justino Jaime T. Surot. Jr. | | | | | | |
| | NIR | Feliciano R. Espina (In-Active since start of TCP III) | | RO XI (MD) (Team Leader-TWG) Rowena P. Jamito | | | | |
| CWG - | | | | | | | | |
| Team for Bridge | CAR MQCHD | Elsa T. Naboye | Pilot Projects | RO XI (MD) | Elsa G. Grumo | | | |
| Repair/Maintenance | BOD | Blesilda C. Ramos | Monitoring Team - | RO XI (MD) | Ma. Ysobel Suzette C. Piatos | - | | |
| (CWG-BRM) | | Jay Jenner B. Biares (In-Active since start of TCP III) | Mindanao Area | R III (MQCHD) | Violeta I. Liwanag | | | |
| I OTAI: 15 | RO XIII BOM (Naw) | Danilo C. Ploquinto | | RO XIII (MD) | Ruei M. Nazareno | - | | |
| (o new) | BOG (New) | Noe M. Bonga Patrick G. Tolentino | (4 new) | RO XI = 1 (PDD = New) RO XI = 2 (PDD = New) | Algin A Gingstan | | | |
| | BOU (New) BO III (PDD-New) | John Edel Dimarucot | | RO XI | Ma Luisa R Flores | | | |
| | BOD - Bridge Division | Renato Rainier M. Vitorio | | RO XIII -1 (PDD-New) | Brvan James Pitos | | | |
| | CAR (MD-New) | Wilmer T. Takinan | | RO XIII -2 (MD-New) | Irewill D. Flores | 1 | | |
| | RO VII (CD-New) | Vincent Montrix O. Calapre | | · · · · · · · · · · · · · · · · · · · | | - | | |
| | RO XI (PDD-New) | Greg Matthew D. Yee | | | | | | |
| | RO XIII (PDD) | Bryan James Pitos | Additl. Request of BOI | M: Crisostomo B. Ferrer Engr. II A | lternate | | | |
| | | | | | | | | |
| | BO YI MD | Powene D. Jamite | | | | | | |
| | | Nerio A Anisco | | | | | | |
| CWG - | RO VII MQCHD | Vicente R. Valle, Jr. | | | | | | |
| 1 · · · · · · · · · · · · · · · · · · · | | | | | | | | |

| 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 |
| | RO VII MQCHD RO VII PDD RO VII PDD CAR MQCHD BQS NIR PS DPD BMS PS BRS (New) BQS (New) CAR (PDD-New) RO VII (CD-New) RO VII (CDD-New) |

UPDATED March, 2018

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 | A | R |
|---|--|---|--|------------|--------|
| Overall Goal Conditions of roads and bridges administered by DPWH are improved. | 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. 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. 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. | Records of DPWH. Records of DPWH. Records of DPWH, interview with concerned staff of DPWH | | chievement | emarks |
| Project Purpose Road and bridge maintenance management works of DPWH are improved. | 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. 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. | Monitoring sheets. Monitoring sheets, interview with concerned staff of target ROs. | 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. 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. 2. Capability of concerned engineers of all ROs/DEOs on bridge maintenance | 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. 2-1 Knowledge (level of understanding on manuals) and skills of engineers who participated in seminars/OJTs on bridge maintenance management | 1-1 Records of seminars and OJTs, Interview with some of participating engineers. 1-2 Monitoring sheets. 2-1 Records of seminars and OJTs, Interview with some of | Engineers participating in Project activities continue working in DPWH. Manuals and guidelines developed or revised by the Project are approved by DPWH Central Office. | | |
| 3. Capability of concerned engineers of ROs/DEOs in target Regions (II, III, VII, VIII, and XIII) on special bridge maintenance management is | 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. 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 are enhanced (60% of those engineers agree that their knowledge and skills on maintenance management and inspections of special bridges are enhanced (60% of those engineers agree that their knowledge and skills on maintenance management and shills on man | 3-1 Records of seminars and OJTs, Interview with some of participating engineers. 3-2 Monitoring sheets. | | | |
| enhanced. | inspections of special bridges have been enhanced).3-2 4 planned pilot projects on special bridge repair are implemented. | | | | |

| 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 | Ir | nputs | |
|---|---|--|---|
| 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 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. <tr< td=""><td>Image: system 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</td><td> Philippine side 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 Suitable office spaces with necessary equipment for the Project implementation at Central Office and Regional Offices (CAR, II, III, VII, XI, and XIII) Project expenses Implementation of pilot projects Seminars and workshops Travel and allowance for participating in Project activities Others </td><td> Participation of C/Ps and other concerned engineers in Project activities is ensured. Pre-condition Philippine government allocates budget for the Project (implementing Sustainability Program) without any major delay. </td></tr<> | Image: system 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 | Philippine side 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 Suitable office spaces with necessary equipment for the Project implementation at Central Office and Regional Offices (CAR, II, III, VII, XI, and XIII) Project expenses Implementation of pilot projects Seminars and workshops Travel and allowance for participating in Project activities Others | Participation of C/Ps and other concerned engineers in Project activities is ensured. Pre-condition Philippine government allocates budget for the Project (implementing Sustainability Program) without any major delay. |
| 3-6 Review special bridge inspection manuals developed by the Phase-II and make their necessary revisions. | Local expenses necessary for Project activities | | |
| 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. | | | |

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, IL, III, VII, VII, XI and XIII) of DPWH

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 | A | R |
|---|---|--|--|------------|--------|
| Overall Goal Conditions of roads and bridges administered by DPWH are improved. | 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. 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. 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. | Records of DPWH. Records of DPWH. Records of DPWH, interview with concerned staff of DPWH | | chievement | emarks |
| Project Purpose Road and bridge maintenance management works of DPWH are improved. | 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. 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. | Monitoring sheets. Monitoring sheets, interview with concerned staff of target ROs. | 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. 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. 2. Capability of concerned engineers of all ROs/DEOs on bridge maintenance | 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. 2-1 Knowledge (level of understanding on manuals) and skills of engineers management in contract of the matter protocol of the seminary (OJTs on builded management). | 1-1 Records of seminars and OJTs, Interview with some of participating engineers. 1-2 Monitoring sheets. 2-1 Records of seminars and OJTs, Interview with some of | Engineers participating in Project activities continue working in DPWH. Manuals and guidelines developed or revised by the Project are approved by DPWH Central Office | | |
| 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. | who participated in seminars/OJ1s 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. 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. | Interview with some of participating engineers. 2-2 Monitoring sheets. 3-1 Records of seminars and OJTs, Interview with some of participating engineers. 3-2 Monitoring sheets. | | | |

| 4. Database system to be utilized for | 4-1 | Opera |
|---------------------------------------|-----|--------|
| road and bridge maintenance | | repair |
| management is developed. | | |

ation of database system on road slope stability works and bridge 4-1 Monitoring sheets, database rs (including periodic maintenance) is started.

system, and interview with concerned DPWH staff.

| Activities | In | nputs | |
|---|---|--|--------------------------------------|
| 1-1 Assist conducting seminars/OJTs on road maintenance management by | Japanese side | Philippine side | 1. Participation of C/Ps and other |
| Sustainability Program for concerned engineers of all ROs/DEOs. | 1. Experts | 1. C/P | concerned engineers in Project |
| Recommended List of Equipment/Tools for road maintenance. | - Team Leader/Bridge maintenance | - Project Manager | activities is ensured. |
| 1-2 Assist implementing pilot projects on road slope stability and relevant OJTs. | management | Deputy Project Manager | |
| 1-3 Monitor and evaluate situations of road maintenance management by ROs/DEOs. | - Road maintenance management | Project Coordinator | |
| 1-4 Review manuals on road maintenance management and construction supervision | - Road slope protection | - Other Counterpart personnel from | |
| developed and/or revised by the Phase-II and make their necessary revisions. | - Bridge repair | Central Office and Regional Offices | |
| 2-1 Assist conducting seminars/OJTs on bridge maintenance management by | - Special bridge maintenance | (CAR, II, III, VII, NIR, VIII, XI, and | |
| Sustainability Program for concerned engineers of all ROs/DEOs. | management | XIII) for TWG and CWG | |
| Recommended List of Equipment/Tools for road maintenance. | - Special bridge repair (1) | - Supporting staff | |
| 2-2 Assist conducting seminars/OJTs on bridge engineering inspections by | - Special bridge repair (2) | - Counterpart personnel from | |
| Sustainability Program for concerned engineers of all ROs/DEOs. | - Database system | Non-Pilot Regional Offices (I, IV-A, | |
| Bridge Condition Data Review and Bridge Engineering Inspection. | - Monitoring and | IV-B, V, VI, IX, X and XII) | |
| 2-3 Assist implementing pilot projects on bridge repair and relevant OJTs. | evaluation/Coordinator | | |
| 2-4 Monitor and evaluate situations of bridge maintenance and engineering | - Other as necessary | 2. Suitable office spaces with | |
| inspections by ROs/DEOs. | | necessary equipment for the Project | |
| 2-5 Review manuals on bridge maintenance management and construction | 2. C/P trainings in Japan and/or third | implementation at Central Office | |
| supervision developed and/or revised by the Phase-II and make their necessary | country | and Regional Offices (CAR, II, III, | |
| revisions. | Japan Training Stimes | VII, XI, and XIII) | |
| | I hird Country Training I time | 2 Decidat averages | |
| 3-1 Develop special bridge maintenance and management manual. | 2 Provision of aquinment | 5. Project expenses | Pre-condition |
| 3-2 Conduct seminars/OJTs on special bridge maintenance management for concerned | 5. Provision of equipment | - Implementation of phot projects | 1. Philippine government allocates |
| engineers of target ROs/DEOs. | - Tools for OJT Equipment for database system | - Seminars and workshops | budget for the Project (implementing |
| 3-3 Assist conducting seminars/OJTs on special bridge inspections by Sustainability | - Equipment for database system | - Traver and anowance for | Sustainability Program) without any |
| Program for concerned engineers of target ROs/DEOs (conduct OJT for RO-VIII). | - Others | - Others | major delay. |
| 3-4 Assist implementing pilot projects on special bridge repair and relevant O/Ts. | A Local expenses necessary for | - Others | |
| 3-5 Monitor and evaluate situations of special bridge inspections by ROs/DEOs. | 4. Local expenses necessary for Project activities | | |
| 3-6 Review special bridge inspection manuals developed by the Phase-II and make | roject activities | | |
| 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. | | | |
| | | | |

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) **Counternant Agencies:** Central Office and Regional Offices (CAR, II, III, VII, VII, XI and XIII) of DPWH

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 | A | R |
|---|--|--|--|------------|--------|
| Overall Goal Conditions of roads and bridges administered by DPWH are improved. | 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. 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. 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. | Records of DPWH. Records of DPWH. Records of DPWH, interview with concerned staff of DPWH | | chievement | emarks |
| Project Purpose Road and bridge maintenance management works of DPWH are improved. | 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. 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. | Monitoring sheets. Monitoring sheets, interview with concerned staff of target ROs. | 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. 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. 2. Capability of concerned engineers of all ROs/DEOs on bridge 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. 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). | 1-1 Records of seminars and OJTs, Interview with some of participating engineers. 1-2 Monitoring sheets. 2-1 Records of seminars and OJTs, Interview with some of participating engineers. 2-2 Monitoring sheets. | Engineers participating in Project activities continue working in DPWH. Manuals and guidelines developed or revised by the Project are approved by DPWH Central Office. | | |
| 3. Capability of concerned engineers of ROs/DEOs in target Regions (II, III, VII, VIII, and XIII) on special bridge maintenance management is enhanced. | 2-2 17 planned pilot projects on bridge repair are implemented. 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 | 4-1 | Opera |
|---------------------------------------|-----|--------|
| road and bridge maintenance | | repair |
| management is developed. | | |

ation of database system on road slope stability works and bridge 4-1 Monitoring sheets, database rs (including periodic maintenance) is started.

system, and interview with concerned DPWH staff.

| Activities | | | |
|--|--|--|---|
| 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. 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. 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. | 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 | Philippine side 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) Suitable office spaces with necessary equipment for the Project implementation at Central Office and Regional Offices (CAR, II, III, VII, XI, and XIII) | 1. Participation of C/Ps and other concerned engineers in Project activities is ensured. |
| 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. | Third Country Training 1 time 3. Provision of equipment Tools for OJT Equipment for database system Others 4. Local expenses necessary for Project activities | Project expenses Implementation of pilot projects Seminars and workshops Travel and allowance for participating in Project activities Others | 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. | | | |

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 | A | R |
|---|---|--|--|------------|--------|
| Overall Goal Conditions of roads and bridges administered by DPWH are improved. | 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. 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. 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. | Records of DPWH. Records of DPWH. Records of DPWH, interview with concerned staff of DPWH | | chievement | emarks |
| Project Purpose Road and bridge maintenance management works of DPWH are improved. | 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. 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. | Monitoring sheets. Monitoring sheets, interview with concerned staff of target ROs. | 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. 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. 2. Capability of concerned engineers of | 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. 2-1 Knowledge (level of understanding on manuals) and skills of engineers | 1-1 Records of seminars and OJTs, Interview with some of participating engineers. 1-2 Monitoring sheets. 2-1 Records of seminars and OJTs, | Engineers participating in Project activities continue working in DPWH. Manuals and guidelines developed or revised by the Project are approved by DPWH | | |
| all ROs/DEOs on bridge maintenance management is enhanced. | 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. | Interview with some of participating engineers. 2-2 Monitoring sheets. | Central Office. | | |
| 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 | 4-1 Operation of database system on road slope stability works and bridge | 4-1 | Monitoring sheets, database | | |
|---------------------------------------|---|-----|-----------------------------|--|--|
| road and bridge maintenance | repairs (including periodic maintenance) is started. | | system, and interview with | | |
| management is developed. | | | concerned DPWH staff. | | |

| Activities | I | nputs | |
|---|--|--|--------------------------------------|
| 1-1 Assist conducting seminars/OJTs on road maintenance management by | Japanese side | Philippine side | 1. Participation of C/Ps and other |
| Sustainability Program for concerned engineers of all ROs/DEOs. | 1. Experts | 1. C/P | concerned engineers in Project |
| Recommended List of Equipment/Tools for road maintenance. | - Team Leader/Bridge maintenance | - Project Manager | activities is ensured. |
| 1-2 Assist implementing pilot projects on road slope stability and relevant OJTs. | management | - Deputy Project Manager | |
| Conduct condition inspection of road slope protection in CAR using drone | - Road maintenance management | - Project Coordinator | |
| technology. | - Road slope protection | - Other Counterpart personnel from | |
| 1-3 Monitor and evaluate situations of road maintenance management by ROs/DEOs. | - Bridge repair | Central Office and Regional Offices | |
| 1-4 Review manuals on road maintenance management and construction supervision | - Special bridge maintenance | (CAR, II, III, VII, NIR, VIII, XI, and | |
| developed and/or revised by the Phase-II and make their necessary revisions. | management | XIII) for TWG and CWG | |
| 2-1 Assist conducting seminars/OJTs on bridge maintenance management by | - Special bridge repair (1) | - Supporting staff | |
| Sustainability Program for concerned engineers of all ROs/DEOs. | - Special bridge repair (2) | - Counterpart personnel from | |
| Recommended List of Equipment/Tools for road maintenance. | - Database system | Non-Pilot Regional Offices (NCR, I, | |
| 2-2 Assist conducting seminars/OJTs on bridge engineering inspections by | - Monitoring and | IV-A, IV-B, V, VI, IX, X and XII) | |
| Sustainability Program for concerned engineers of all ROs/DEOs. | evaluation/Coordinator | | |
| Bridge Condition Data Review and Bridge Engineering Inspection. | - Other as necessary | 2. Suitable office spaces with | |
| 2-3 Assist implementing pilot projects on bridge repair and relevant OJTs. | 2. C/P trainings in Japan and/or third | necessary equipment for the Project | |
| 2-4 Monitor and evaluate situations of bridge maintenance and engineering | country | implementation at Central Office | |
| inspections by ROs/DEOs. | Japan Training 3times | and Regional Offices (CAR, II, III, | |
| 2-5 Review manuals on bridge maintenance management and construction | Third Country Training 1 time | VII, XI, and XIII) | |
| supervision developed and/or revised by the Phase-II and make their necessary | 3. Provision of equipment | | |
| revisions. | - Tools for OJT | 3. Project expenses | |
| 3-1 Develop special bridge maintenance and management manual. | - Equipment for database system | Implementation of pilot projects | Pre-condition |
| 3-2 Conduct seminars/OJTs on special bridge maintenance management for concerned | - Others | - Seminars and workshops | 1. Philippine government allocates |
| engineers of target ROs/DEOs. | 4. Local expenses necessary for | - Travel and allowance for | budget for the Project (implementing |
| 3-3 Assist conducting seminars/OJTs on special bridge inspections by Sustainability | Project activities | participating in Project activities | Sustainability Program) without any |
| Program for concerned engineers of target ROs/DEOs (conduct OJT for RO-VIII). | 5. Video recording of Project | - Others | major delay. |
| Conduct condition inspection of special bridges in RO-II and RO-XIII using drone | activities | | |
| technology | 6. Invitation to Observation Trip for | | |
| 3-4 Assist implementing pilot projects on special bridge repair and relevant OJTs. | the Road & Bridge Maintenance | | |
| 3-5 Monitor and evaluate situations of special bridge inspections by ROs/DEOs. | in Japan | | |
| 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. | | | |

PDM (Project Design Matrix) Version No. 5

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, IL, III, VII, VII, XI and XIII) of DPWH

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 | A | R |
|---|---|---|--|------------|--------|
| Overall Goal Conditions of roads and bridges administered by DPWH are improved. | 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. 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. 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. | Records of DPWH. Records of DPWH. Records of DPWH, interview with concerned staff of DPWH | | chievement | emarks |
| Project Purpose Road and bridge maintenance management works of DPWH are improved. | 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. 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. | Monitoring sheets. Monitoring sheets, interview with concerned staff of target ROs. | 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. 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. 2. Conclusion of the second s | 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. | Engineers participating in Project activities continue working in DPWH. Manuals and guidelines developed or revised by the Project are approved by DPWH | | |
| 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. | Central Office. | | |
| 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 | 4-1 Operation of database system on road slope stability works and bridge | 4-1 | Monitoring sheets, database | | |
|---------------------------------------|---|-----|-----------------------------|--|--|
| road and bridge maintenance | repairs (including periodic maintenance) is started. | | system, and interview with | | |
| management is developed. | | | concerned DPWH staff. | | |

| Activities | Inputs | | |
|---|--|--|--------------------------------------|
| 1-1 Assist conducting seminars/OJTs on road maintenance management by | Japanese side | Philippine side | 1. Participation of C/Ps and other |
| Sustainability Program for concerned engineers of all ROs/DEOs. | 1. Experts | 1. C/P | concerned engineers in Project |
| Recommended List of Equipment/Tools for road maintenance. | - Team Leader/Bridge maintenance | - Project Manager | activities is ensured. |
| 1-2 Assist implementing pilot projects on road slope stability and relevant OJTs. | management | - Deputy Project Manager | |
| Conduct condition inspection of road slope protection in CAR using drone | - Road maintenance management | - Project Coordinator | |
| technology. | - Road slope protection | - Other Counterpart personnel from | |
| 1-3 Monitor and evaluate situations of road maintenance management by ROs/DEOs. | - Bridge repair | Central Office and Regional Offices | |
| 1-4 Review manuals on road maintenance management and construction supervision | - Special bridge maintenance | (CAR, II, III, VII, NIR, VIII, XI, and | |
| developed and/or revised by the Phase-II and make their necessary revisions. | management | XIII) for TWG and CWG | |
| 2-1 Assist conducting seminars/OJTs on bridge maintenance management by | - Special bridge repair (1) | - Supporting staff | |
| Sustainability Program for concerned engineers of all ROs/DEOs. | - Special bridge repair (2) | - Counterpart personnel from | |
| Recommended List of Equipment/Tools for road maintenance. | - Database system | Non-Pilot Regional Offices (NCR, I, | |
| 2-2 Assist conducting seminars/OJTs on bridge engineering inspections by | - Monitoring and | IV-A, IV-B, V, VI, IX, X and XII) | |
| Sustainability Program for concerned engineers of all ROs/DEOs. | evaluation/Coordinator | | |
| Bridge Condition Data Review and Bridge Engineering Inspection. | - Other as necessary | 2. Suitable office spaces with | |
| 2-3 Assist implementing pilot projects on bridge repair and relevant OJTs. | 2. C/P trainings in Japan and/or third | necessary equipment for the Project | |
| 2-4 Monitor and evaluate situations of bridge maintenance and engineering | country | implementation at Central Office | |
| inspections by ROs/DEOs. | Japan Training 3times | and Regional Offices (CAR, II, III, | |
| 2-5 Review manuals on bridge maintenance management and construction | Third Country Training 1 time | VII, XI, and XIII) | |
| supervision developed and/or revised by the Phase-II and make their necessary | 3. Provision of equipment | | |
| revisions. | - Tools for OJT | 3. Project expenses | |
| 3-1 Develop special bridge maintenance and management manual. | - Equipment for database system | - Implementation of pilot projects | Pre-condition |
| 3-2 Conduct seminars/OJTs on special bridge maintenance management for concerned | - Others | - Seminars and workshops | 1. Philippine government allocates |
| engineers of target ROs/DEOs. | 4. Local expenses necessary for | - Travel and allowance for | budget for the Project (implementing |
| 3-3 Assist conducting seminars/OJTs on special bridge inspections by Sustainability | Project activities | participating in Project activities | Sustainability Program) without any |
| Program for concerned engineers of target ROs/DEOs (conduct OJT for RO-VIII). | 5. Video recording of Project | - Others | major delay. |
| Conduct condition inspection of special bridges in RO-II and RO-XIII using drone | activities | | |
| technology | 6. Invitation to Observation Trip for | | |
| 3-4 Assist implementing pilot projects on special bridge repair and relevant OJTs. | the Road & Bridge Maintenance | | |
| 3-5 Monitor and evaluate situations of special bridge inspections by ROs/DEOs. | in Japan | | |
| 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. | | | |

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

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 | R A |
|---|---|--|--|----------------------|
| Overall Goal Conditions of roads and bridges administered by DPWH are improved. | 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. 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. 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. | Records of DPWH. Records of DPWH. Records of DPWH, interview with concerned staff of DPWH | | emarks chievement |
| Project Purpose Road and bridge maintenance management works of DPWH are improved. | 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. 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. | Monitoring sheets. Monitoring sheets, interview with concerned staff of target ROs. | 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. 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. 2. Capability of concerned engineers of all ROs/DEOs on bridge 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. 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. | 1-1 Records of seminars and OJTs, Interview with some of participating engineers. 1-2 Monitoring sheets. 2-1 Records of seminars and OJTs, Interview with some of participating engineers. 2-2 Monitoring sheets. | Engineers participating in Project activities continue working in DPWH. Manuals and guidelines developed or revised by the Project are approved by DPWH Central Office. | |
| 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 | 4-1 Operation of database system on road slope stability works and bridge | 4-1 | Monitoring sheets, database | | |
|---------------------------------------|---|-----|-----------------------------|--|--|
| road and bridge maintenance | repairs (including periodic maintenance) is started. | | system, and interview with | | |
| management is developed. | | | concerned DPWH staff. | | |

| Activities | Inputs | | |
|---|--|--|--------------------------------------|
| 1-1 Assist conducting seminars/OJTs on road maintenance management by | Japanese side | Philippine side | 1. Participation of C/Ps and other |
| Sustainability Program for concerned engineers of all ROs/DEOs. | 1. Experts | 1. C/P | concerned engineers in Project |
| Recommended List of Equipment/Tools for road maintenance. | - Team Leader/Bridge maintenance | - Project Manager | activities is ensured. |
| 1-2 Assist implementing pilot projects on road slope stability and relevant OJTs. | management | - Deputy Project Manager | |
| Conduct condition inspection of road slope protection in CAR using drone | - Road maintenance management | - Project Coordinator | |
| technology. | - Road slope protection | - Other Counterpart personnel from | |
| 1-3 Monitor and evaluate situations of road maintenance management by ROs/DEOs. | - Bridge repair | Central Office and Regional Offices | |
| 1-4 Review manuals on road maintenance management and construction supervision | - Special bridge maintenance | (CAR, II, III, VII, NIR, VIII, XI, and | |
| developed and/or revised by the Phase-II and make their necessary revisions. | management | XIII) for TWG and CWG | |
| 2-1 Assist conducting seminars/OJTs on bridge maintenance management by | - Special bridge repair (1) | - Supporting staff | |
| Sustainability Program for concerned engineers of all ROs/DEOs. | - Special bridge repair (2) | - Counterpart personnel from | |
| Recommended List of Equipment/Tools for road maintenance. | - Database system | Non-Pilot Regional Offices (NCR, I, | |
| 2-2 Assist conducting seminars/OJTs on bridge engineering inspections by | - Monitoring and | IV-A, IV-B, V, VI, IX, X and XII) | |
| Sustainability Program for concerned engineers of all ROs/DEOs. | evaluation/Coordinator | | |
| Bridge Condition Data Review and Bridge Engineering Inspection. | - Other as necessary | 2. Suitable office spaces with | |
| 2-3 Assist implementing pilot projects on bridge repair and relevant OJTs. | 2. C/P trainings in Japan and/or third | necessary equipment for the Project | |
| 2-4 Monitor and evaluate situations of bridge maintenance and engineering | country | implementation at Central Office | |
| inspections by ROs/DEOs. | Japan Training 3times | and Regional Offices (CAR, II, III, | |
| 2-5 Review manuals on bridge maintenance management and construction | Third Country Training 1 time | VII, XI, and XIII) | |
| supervision developed and/or revised by the Phase-II and make their necessary | 3. Provision of equipment | | |
| revisions. | - Tools for OJT | 3. Project expenses | |
| 3-1 Develop special bridge maintenance and management manual. | - Equipment for database system | - Implementation of pilot projects | Pre-condition |
| 3-2 Conduct seminars/OJTs on special bridge maintenance management for concerned | - Others | - Seminars and workshops | 1. Philippine government allocates |
| engineers of target ROs/DEOs. | 4. Local expenses necessary for | - Travel and allowance for | budget for the Project (implementing |
| 3-3 Assist conducting seminars/OJTs on special bridge inspections by Sustainability | Project activities | participating in Project activities | Sustainability Program) without any |
| Program for concerned engineers of target ROs/DEOs (conduct OJT for RO-VIII). | 5. Video recording of Project | - Others | major delay. |
| Conduct condition inspection of special bridges in RO-II and RO-XIII using drone | activities | | |
| technology | 6. Invitation to Observation Trip for | | |
| 3-4 Assist implementing pilot projects on special bridge repair and relevant OJTs. | the Road & Bridge Maintenance | | |
| 3-5 Monitor and evaluate situations of special bridge inspections by ROs/DEOs. | in Japan | | |
| 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. | | | |

=

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

1

Noriaki NIWA Chief Representative Japan International Cooperation Agency (JICA)

Rogelio L. Singson Secretary Department of Public Works and Highways Office of the Secretary Office of the Secretary OUT6\$68889

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 replaced by permanent bridges and strengthening of the shall be 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 nspections 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.

N____

- 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 crganizations 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.

- Logical Framework (Project Design Matrix: PDM) Annex 1
- Tentative Plan of Operation Annex 2
- Annex 3 Project Organization Chart

Joint Coordinating Committee Annex 4

N_

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. 11. 111. VII. VIII. XI and XIII) of DPWH

| Remarks | | | | | 1 | |
|---|--|---|-------------|---|--|---|
| Achievement | | | | | | |
| lmportant Assumptions | | 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. | consistent. | Engineers participating in Project activities continue working in DPWH. Manuals and guidelines developed or revised by the | Project are approved by DPWH Central Office. | |
| Means of Verification 1. Records of DPWH. 2. Records of DPWH. 3. Records of DPWH, interview | WILL CONCELLED STALL OF LAT WIT | Monitoring sheets. Monitoring sheets, interview with concerned staff of target ROs. | | I-1 Records of seminars and OJTs. Interview with some of participating engineers. I-2 Monitoring sheets. | 2-1 Records of seminars and OJTs, Interview with some of participating engineers. 2-2 Monitoring sheets. | 3-1 Records of seminars and OJTs. Interview with some of participating engineers. 3-2 Monitoring sheets. |
| cgional Offices and uten Unanted Largeneering Office Indicators Objectively Verifiable Indicators 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. | 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. 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. | 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. 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. | | 1-1 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. | 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. | 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. |
| Target Groups: Engineers in all 16 K Narrative Summary Overall Goal Conditions of roads and bridges administered by DPWH are improved. | | Project Purpose Road and bridge maintenance management works of DPWH are improved. | Durtante | Unputs 1. Capability of concerned engineers of all ROs/DEOs on road maintenance management is enhanced. | 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. |

Annex I Version No. 0 . 2015

Date :

| | 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. | |
|---|---|---|---|
| Monitoring sheets. database system. interview with concerned DPWH staff. | Inputs Philippine side 1. C/P - Project Manager - Deputy Project Manager - Project Coordinator - Other Counterpart personnel from - Supporting staff - Supporting staff - Suptorting staff - Supporting staff - Supporting staff - Suptorting staff <t< td=""><td> Implementation of pilot projects Seminars and workshops Travel and allowance for participating in Project activities Others </td><td></td></t<> | Implementation of pilot projects Seminars and workshops Travel and allowance for participating in Project activities Others | |
| tope stability works and bridge 4-1 s started. | Japanese side Japanese side I. Experts - Team Leder/Bridge maintenance management - Road maintenance management - Road slope protection - 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 - Other as necessary | Provision of equipment Equipment for database system Others Others Local expenses necessary for Project activities | |
| 4-1 Operation of database system on road s repairs (including periodic maintenance) | ctivities In road maintenance management by ted engineers of all ROs/DEOs. on road slope stability and relevant OJTs. road maintenance management by ROs/DEOs. Ince management and construction supervision hase-II and make their necessary revisions. on bridge maintenance management by ned engineers of all ROs/DEOs. on bridge engineering inspections by ned engineers of all ROs/DEOs. fbridge maintenance engineering inspections by ned engineers and relevant OJTs. fbridge maintenance engineering inspections by fbridge maintenance and nake their necessary ised by the Phase-II and make their necessary | ce and management manual. I bridge maintenance management for concerned on special bridge inspections by Sustainability of target ROs/DEOs (conduct OJT for RO-VIII). s on special bridge repair and relevant OJTs. f special bridge inspections by ROs/DEOs. manuals developed by the Phase-II and make | -documents/data related to road bridge entify issues to be improved. k, necessary entry data, operation mannet, developing the database system. as system based on the basic plan. ial operations of the system at model RO. tion of the results of trial operations at model RO. ing operation manner. se system and its relevant manuals. |
| Database system to be utilized for road and bridge maintenance management is developed. | A 1-1 Assist conducting seminars/OJTs o Sustainability Program for concern 1-2 Assist implementing pilot projects 1-3 Monitor and evaluate situations of 1-4 Review manuals on road maintenai developed and/or revised by the Ph 2-1 Assist conducting seminars/OJTs o 2-1 Assist conducting seminars/OJTs o 2-3 Assist conducting seminars/OJTs o 2-3 Assist implementing pilot projects 2-4 Monitor and evaluate situations of ROs/DEOs. 2-5 Review manuals on bridge maintenais | 3-1 Develop special bridge maintenan 3-2 Conduct seminars/OJTs on special engineers of target ROs/DEOs. 3-3 Assist conducting seminars/OJTs of Program for concerned engineers (3-4 Assist implementing pilot projects 3-5 Monitor and evaluate situations of 3-6 Review special bridge inspection their necessary revisions. | 4-1 Review current filing situation of maintenance management and ide 4-2 Prepare the basic plan (frameword selection of model RO, etc.) for d 4-3 Implement developing the databa 4-4 Enter necessary data and make tri 4-5 Improve the system in considerati 4-6 Prepare relevant manuals includit 4-7 Conduct seminars on the database |

Plan of Operation

Activities Year-Yoar-2 Year-, 8 9 10 11 12 3 4 5 6 7 8 9.10 11 12 7 8 9 10 11 12 ÷ Inception Report (Work Plan) veļu Joint Coordinating Committee 0.2 pille 12. Lan. 0.3 Technical Working Group à 63 1 i Counter part Working Group Monitoring of Project (Monitoring Sheet) 0-4 125 ÷. 0-5 20 0-6 Project Final Report (Draft) ř ļ. , 0-7 Project Final Report . Capability of concerned engineers of all ROs/ DEOs on road maintenance management is enhanced, Assist conducting seminars/OJTs on road maintenance management by Sustainability 1.1 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. Review manuals on road maintenance management and construction supervision 1-4 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. Assist conducting seminars/OJTs on bridge maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs 2-1 Assist conducting seminars/OJTs on bridge engineering inspections by Sustainability Program for concerned engineers of all ROs/DEOs 2.2 2-3 Assist implementing pilot projects on bridge report and relevant OJTs Monitor and evaluate situations of bridge maintenance and engineering inspections by 2.4 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. 4.4 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 1...... -Second Conduct seminars/OJTs on special bridge maintenance management for concerned engineers of target ROs/DEOs TLOPIC 4th OJT Sth OJT 2nd CJT 141 OUT 3-2 4... --+-Assist conducting seminars/OJTs on special bridge inspections by Sustainability Program for concerned engineers of larget ROs/DEOs (conduct OJT for RO-VIII) i. 3-3 ł 1 1 3-4 Assist implementing pilot projects on special bridge repair and relevant OJTs 4% OJT 1st OJT TLO brig Srd CUT 1 3-5 Monitor and evoluate 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. Review current filing situation of documents/data related to road and bridge 4-1 maintenance management and identify issues to be improved. Prepare the basic plan (framework, necessary entry data, operation manner, selection of model RO, etc.) for developing the database system 4-2 4-3 Implement developing lite 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 Propare relevant manuals including operation manner Semino:/OJT Conduct seminars on the database system and its relevant manuals 4-7 ÷ ġ. Training in Japan/Third Country 🖉 Japan Training A Third Country Training 긝 R 0 10 1T G 7

Annex 2

Project Organization Chart



Annex 3

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 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 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/ku57pg00001nz4eu-att/guid ance en.pdf

JICA recommended DPWH to explain the site citizen about the plot 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/c8h0vm3000011dfvatt/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.

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

Manila, 19th June, 2015 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 (Preject 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

۰.

٠,

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. <u>SAFETY MEASURES AND ENVIROMENTAL CONSIDERATIONS FOR</u> <u>PILOT PROJECTS</u>

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_e n.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

٠,

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/an ti 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.

Ŕ

14. <u>RECORD OF DISCUSSIONS</u>

• 、

M

\$

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]

R

[Representative of JICA]

۰.

[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.

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
- 1.1Assist 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 P-oject;



- (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

۰.

(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.

Ŕ

- 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

۰.

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 these granted to experts and members of the missions and their families of third countries or international organizations performing similar missions in the Philippines.

Ŕ

IV. MONITORING AND EVALUATION

۰,

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.

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

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

| Achievement | | | | | |
|--|--|---|---|--|---|
| | | 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 onsured. Philippine government policy on road and bridge sector remains consistent. | I. Engineers participating in Project activities continue working in DPWH. Manuals and guidelines developed or revised by thc | Project are approved by DPWH Central Office. | |
| 1. Records of DPWH. 2. Records of DPWH. 3. Records of DPWH, interview | with concerned staff of DPWH | Monitoring sheets. Monitoring sheets, interview with concerned staff of target ROs. | 1-1 Records of seminars and OJTs, Interview with some of participating engineers. 1-2 Monitoring sheets. | 2-1 Records of seminars and OJTs, Interview with some of participating engineers. 2-2 Monitoring sheets. | 3-1 Records of seminars and OJTS, Interview with some of participating engineers. 3-2 Monitoring sheets. |
| Objectively verifications functions 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 commission | 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. 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. | 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. 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. | 1-1 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. | 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. | 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). |
| Narrative Summary verall Goal onditions of roads and bridges iministered by DPWH are improved. | <u> </u> | roject Purpose koad and bridge maintenance nanagement works of DPWH are mproved. | Outputs 1. Capability of concerned engineers of all ROs/DEOs on road maintenance management is enhanced. | Capability of concerned engineers of all ROs/DEOs on bridge maintenance management is enhanced. | Capability of concerned engineers of ROs/DEOs in target Regions (II, III, VII, VIII, and XIII) on special bridge maintenance management is enhanced. |

Annex 1 Version No. 0 2015

Date :

| 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. | 4-1 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. | Program for concerned engineers on target ACMADICS (Project activities 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. | engineers of target ROs/DEOs. 3-3 Assist conducting seminars/OJTs on special bridge inspections by Sustainability and the seminars/OJTs on special bridge inspections by Sustainability and the seminars/OJTs on special bridge inspections by Sustainability Program) without any participating in Project activities and the seminars/OJTs on special bridge inspections by Sustainability Program) without any participating in Project activities and the seminars/OJTs on special bridge inspections by Sustainability Program) without any participating in Project activities and the seminars/OJTs on special bridge inspections by Sustainability Program) without any participating in Project activities and the seminars/OJTs on special bridge inspections by Sustainability Program and the seminars/OJTs on special bridge inspections by Sustainability Program and the seminars/OJTs on special bridge inspections by Sustainability Program and the seminars/OJTs on special bridge inspections by Sustainability Program and the seminars/OJTs on special bridge inspections by Sustainability Program and the seminars/OJTs on special bridge inspections by Sustainability Program and the seminars/OJTs on special bridge inspections by Sustainability Program and the seminars/OJTs on special bridge inspections by Sustainability Program and the seminars/OJTs on special bridge inspections by Sustainability Program and the seminars/OJTs on special bridge inspections by Sustainability Program and the seminars/OJTs on the seminars/OJTs o | 3-1 Develop special ortige maintenance management for concerned - Equipment for database system - Seminars and workshops 1. Philippine government allocates 3-2 Conduct seminars/OJTs on special bridge maintenance management for concerned - Others - Travel and allowance for he Project firmlementing | supervision accordona and or revisions of an arriver of a first arrivers from a first arrivers | ROS/DEUS. 2-5 Review manuals on bridge maintenance management and construction 2.5 Review manuals on bridge maintenance management and construction | Assumption of productions of bridge maintenance engineering inspections by Monitor and evaluation and evaluation at contractions of bridge maintenance engineering inspections by Other as necessary Other as necessary | 2-2 Assist conducting summary of the space of all ROs/DEOs. Sustainability Program for concerned engineers of all ROs/DEOs. Database system 2. Suitable office spaces with 2. Suitable office spaces with | Assist conducting seminary of the value of all ROs/DEOs. Sustainability Program for concerned engineers of all ROs/DEOs. Sustainability Program for concerned and real ROS/DEOs. Sustainability Program for concerned and read ROS/DEOs. Sustainability Program | - Bridge repair Central Office and Regional Offices - Bridge repair | 4 Review manuals on road maintenance management and construction supervision - Road maintenance management - Project Coordinator | |
|---|---|--|--|--|---|--|--|--|--|---|--|--|
| 4. Review menuals on rod maintenance management de construction supervision. 4. Review menuals on rod maintenance management de construction supervision. 5. Read dispervision. 7. Project Contrapting personand from construction supervision. 1. Assist conducting seminare/OTS on hidge raditenance management by static conducting seminare/OTS on bridge raditenance transgement by static and texpoint of the maintenance management by static conducting seminare/OTS on bridge raditense inpection. 0. Net Countrapting term of Other countrapting term of the maintenance management by static conducting seminare/OTS on bridge raditense of all ROS/DEOs. 5. Special bridge maintenance (CAR, 11, 11, V1), V11, X1, and X11) 2. Assist implementing phy program for concerned engineers of all ROS/DEOs. 5. Special bridge repair (C) 5. Supporting staff 0. Supporting staff 3. Assist implementing phy projection by static and regional of the projection of a countrapt on a constance of management and constanction are concerned on phy the Prace/I and male their necessary granter for the project in phone and revision developed addrer revised by the Prace/I and male their necessary proving and evaluation revision developed addrer revised by the Prace/I and male their necessary proving and evaluation revisions constant and revisions are accessary in the prace of the prace/I and male their necessary provision developed addrer revised by the Prace/I and male their necessary provision developed addrer revised by the Prace/I and male their necessary provision developed addrer revised by the Prace/I and male their necessary provision developed addrer revised by the Prace/I and male their necessary provision developed addrer revised by the Prace/I and male their necessary provision developed addrer revis | 4. Review manuals on road maintenance management 4. Review manuals on road maintenance management 7. Project contantor 4. Review manuals on road maintenance management 1. Assist conducting saminars/OTI's on bridge maintenance 8. Review manuals on road maintenance 0. Project contantor 5. Assist conducting saminars/OTI's on bridge maintenance 8. Review manuals on road maintenance 0. Project contantor 0. Project contantor 2. Assist conducting saminars/OTI's on bridge maintenance 8. Review manuals on the primer of all ROG/DEOs 9. Subio office and Regional Offices 3. Assist implementing pilot projects on bridge maintenance 9. Subio office and Regional Offices 0. Project 3. Assist implementing pilot projects on bridge maintenance engineering inspections by ROG/DEOs. 9. Subio office spaces with necessary equipment for the Project 0. Project 3. Solview manuals on bridge maintenance engineering inspections by ROG/DEOs. 9. Subio office spaces with necessary equipment for the Project 0. Project expanses 3.1 Develop special bridge maintenance engineering semicers and review of the project expanses 0. Project expanses 1. Project expenses 3.2 Conduct seminars/OTFs on special bridge inspections by ROG/DEOs. 9. Provision of equipment 1. Project expenses 3.1 Develop special bridge maintenance engineering seminaton of eveloped and/or revised by the Phase-II and male their necessary for oncerned engineere | 4. Review manuals on road maintenance management action supervision - Road maintenance management action supervision - Road maintenance management action supervision 6. evcloped and/or revised by the Phase-II and make their necessary revisions. - Road along protection - Other Counterpart personnel from 1. Assist conducting seminars/OTIS on bridge maintenance management by mash lity Program for conceared engineers of all ROs/DEOs. - Road maintenance management by mach revisions by the Phase-II and make their necessary revisions. - Road maintenance management by mach revisions by the Phase-II and make their necessary reminance management by maintenance management by moleconducting seminars/OTIS on bridge engineers of all ROs/DEOs. - Road maintenance management by moleconducting seminars/OTIS on bridge engineers of all ROs/DEOs. - Special bridge repair (1) - Special bridge repair (2) - Sustainbeloffices 2. Assist implementing pilot projects on bridge engineers of all ROs/DEOs. - Database system - Special bridge repair (2) - Sustainbeloffices 2. Assist implementing pilot projects on bridge maintenance engineers of a ROs/DEOs. - Database system - Sustainbeloffices - CAR, II, III, VII, XI, and XIII) 2. Assist implementing on bridge maintenance engineers of a revision developed and/or revised by the Phase-II and make their necessary - Other as necessary - Sustainbeloffices - Project expense with necessary 2. Assist conducting seminars/OTIS on special bridge maintenance engineers of target ROs/DEOs. | 4 Review manuals on road maintenance management acrostruction supervisions. - Road doop eprotection developed and/or revised by the Phase-II and make their necessary revisions. - Road doop eprotection developed and/or revised by the Phase-II and make their necessary revisions. - Road doop eprotection developed and/or revised by the Phase-II and make their necessary revisions. - Road doop eprotection contantator - Project Coordinator - Other contrantator 1 Assist conducting seminars/OTS on bridge maintenance management by sustainability Program for concerned engineers of all ROs/DEOs. - Road stops materance - Other contrant offices and Regional Offices 2 Assist implementing pilot projects on bridge maintenance management for project implementations of bridge maintenance engineering inspections by ROs/DEOs. - Subabase system - Supporting saff - Supporting saff 2.3 Assist implementations of bridge maintenance management and construction and evaluate situations of bridge maintenance management and construction supervision developed and/or revised by the Phase-II and make their necessary revisions. 2. Cort trainings in Japan and/or third virt, Al, and XIII) 2. Project expenses 2.3 Rosinon for the revision developed and/or revised by the Phase-II and make their necessary evinementation at evaluation and evaluation at evaluation at evaluation at revisions. 2. CP trainings in Japan and/or third virt, Al, Al, Al, Al, Al, Al, Al, Al, Al, Al | 4 Review manuals on road maintenance management and construction supervision. - Read and/or revised by the Phase-II and make their necessary revisions. - Road and/or revised by the Phase-II and make their necessary revisions. - Road slope protection - Project Coortinator 1 Assist conducting seminars/OJTs on bridge maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs. - Road slope protection - Other Counterpart personnel from 2 Assist conducting seminars/OJTs on bridge engineers of all ROs/DEOs. - Special bridge repair (1) - Sustainability Program for concerned engineers of all ROs/DEOs. 2.3 Assist conducting seminars/OJTs on bridge engineers of all ROs/DEOs. - Sustainability Program for concerned engineers of all ROs/DEOs. - Supporting staff - Supporting staff 2.3 Assist implementing pilot projects on bridge repair and relevant OJTs. - Suptorting staff - Supporting staff 2.3 Ros/DEOs. - Database system - Suptorting staff - Supporting staff 2.4 Ros/DEOs. - Monitor and evaluation - Monitor and evaluation - Cuther and Regional Office 2.5 Ros/DEOs. - Suptorting staff - Suptorting staff - Suptorting staff 2.5 Ros/DEOs. - Other as necessary - Other as necessary - Other and relevant Of | 4 Review manuals on road maintenance management and construction supervision. - Review manuals on road maintenance management developed and/or revised by the Phase-II and make their necessary revisions. - Road alope protection counterpart personnel from developed and/or revised by the Phase-II and make their necessary revisions. - Road alope protection counterpart personnel from developed and/or revised by the Phase-II and make their necessary revisions. - Road slope protection counterpart personnel from conterpart for conterpart personnel from conterpart for conterpart personnel from conterpart for conterpart personnel from conterpart for conterpart for conterpart personnel from conterpart for conterpart for conterpart for conterpart for conterpart for conterpart for the project inplementation of the froject inplementation at central Office spaces with necessary component for the Project inplementation at Control of the froject inplementation at Control of the froject inplementation at Control of the froject intplementation at control of the froject intpl | 4 Review manuals on road maintenance management and construction supervision. - Road maintenance management and construction supervision. - Road maintenance management and construction supervision. 4 Review manuals on road maintenance management developed and/or revised by the Phase-II and make their necessary revisions. - Road slope protection - ProJect Coontenpart personnel from conterpart personnel from -1 Assist conducting seminars/OJTs on bridge maintenance management Sustainability Program for concerned engineer of all ROs/DEOs. - Road slope protection - Other Counterpart personnel from -2 Assist conducting seminars/OJTs on bridge maintenance management - Null, VII, VII, VII, VII, VII, VII, VII, V | 4 Review manuals on road maintenance management and construction supervision. - Road maintenance management and construction supervision. - Road maintenance management and construction supervision. 4 Review manuals on road maintenance management developed and/or revised by the Phase-II and make their necessary revisions. - Road slope protection - Project Coondinator -1 Assist conducting seminars/OJTs on bridge maintenance management by seminars/OJTs on bridge maintenance management - Road slope protection - Other Counterpart personnel from -1 Assist conducting seminars/OJTs on bridge maintenance management by seminars/OJTs on bridge engineers of all ROs/DEOs. - Special bridge maintenance - CAR, II, III, VII, VII, XI, and XIII) -2 Assist conducting seminars/OJTs on bridge engineering inspections by concerned engineers of all ROs/DEOs. - Special bridge repair (1) - Supporting staff -2 Assist conducting seminars/OJTs on bridge repair and relevant OJTs. - Supporting staff - Supporting staff | 4 Review manuals on road maintenance management and/or revised by the Phase-II and make their necessary revisions. 4 Reveloped and/or revised by the Phase-II and make their necessary revisions. 5 Road slope protection 6 Road slope protection 7 Differ Counterpart personnel from central Office and Regional Offices 1 Assist conducting seminars/OJTs on bridge maintenance management by for the conducting seminars/OJTs on bridge maintenance management conducting seminars/OJTs on bridge maintenance management conducting seminars/OJTs on bridge environce management conducting seminars/OJTs on bridge environce management conducting staft 2 Road slope protection concurrence management conducting staft 3 Reveloped and/or revised by the Phase-II and make their necessary revisions. 9 Road slope protection contrapart personnel from contraport personnel from contrapart personnel from contraport personnel from contrapart person | 4 Review manuals on road maintenance management and construction supervision 2 Reveloped and/or revised by the Phase-II and make their necessary revisions. 2 Road slope protection by the Counterpart personnel from control office and Regional Offices 3 Bridge repair 4 Reveloped and/or revised by the Phase-II and make their necessary revisions. 4 Reveloped and/or revised by the Phase-II and make their necessary revisions. 4 Reveloped and/or revised by the Phase-II and make their necessary revisions. 4 Reveloped and/or revised by the Phase-II and make their necessary revisions. 5 Road slope protection 6 Bridge repair 7 Central Office and Regional Offices 7 Structure of the Phase-II and make their necessary revisions. | 4 Review manuals on road maintenance management and construction supervision - Road management - Project Coordinator - Project Coordinator - Areveloned and/or revised by the Phase-II and make their necessary revisions. - Road slope protection - Other Counterpart personnel from | | ActivitiesInputsActivitiesActivitiesActivitiesInputsActivitiesInputsActivitiesInputsSsist conducting seminars/OJTs on road maintenance management by ustainability Program for concerned engineers of all ROs/DEOs.Instainability Program for concerned engin |
| Assist implementangenerating plot projection a Review manales or road maintenance management by Review manales or road maintenance management and construction supervision. Description and construction supervision. <thdescriptic and="" construction="" supervision.<="" supreservision="" th=""></thdescriptic> | 2 Assist implementing pilot projects on read-ond structure and presented in pilot project on read-indicating eminiterance management tard construction supervision. 2 Assist conducting eminiterance management tard construction supervision. 2 Noniter and regional Office and Regional Offices 8 Nonite are evaluating eminiterance management target end in pilot project numbers in the reaseasty revision. 2 Noniter and regional Offices 2 Noniter counterpart personnel tom 8 Noniter are evaluating eminiterance management target end in pilot project on road structure management target end in pilot project on policie regional offices 2 Noniter and regional Offices 2 Noniter counterpart personnel tom 1 Assist conducting eminiterance management target end in pilot project on policie regional offices 2 Noniton and counterpart personnel tom 2 Noniton and counterpart personnel tom 3 Assist implementing pilot projects on bridge reginer of instance control of contrast on transformed engineers of all ROS/DEGs. 3 Special bridge regin (1) 3 Supporting saff 3 Noniton and counterpart personnel tom 3 Assist implementing pilot projects on bridge regineer of all ROS/DEGs. 3 Supporting saff 3 Noniton and evaluation 3 Noniton and evaluation 3 Static implementing pilot projects on bridge maintenance management mands on bridge maintenance management mands 3 Noniton and evaluation 3 Noniton and evaluation 3 Noniton and evaluation 3 Static implementing pilot projecto on pridge maintenance management mands 3 Noniton | Assist implementing filot projects on road stoper stanty. Assist implementing filot projects on road stoper stanty with and for revised by the Phase-II and malterance management developed and/or revised by the Phase-II and malterance management developed and/or revised by the Phase-II and malterance management developed and/or revised by the Phase-II and malterance management developed and/or revised by the Phase-II and malterance management developed and/or revised by the Phase-II and malterance management developed and/or revised by the Phase-II and malterance management developed and/or revised by the Phase-II and malterance management developed and/or revised by the Phase-II and malterance management by management and construction spections by sustainability Program for concerned engineers of all ROS/DEOs. Assist conducting seminars/OTB on bridge maintenance management statations of bridge maintenance engineers of all ROS/DEOs. Assist conducting seminars/OTB on bridge maintenance management statations of bridge maintenance engineers of all ROS/DEOs. Assist conducting seminars/OTB on bridge maintenance engineers of all ROS/DEOs. Assist conducting seminars/OTB on bridge maintenance engineers of all ROS/DEOs. Assist implementation and evaluation in the matterance engineers of all ROS/DEOs. Suptorting staff Subtole office staff Suptorting staff | 3. Assist implementing pilot projects on road slope stanting and evaluations of road maintenance management by Nobilor revised by the Phase-II and make their necessary revisions. - nanagement transment net work of road maintenance management the Review manuals on road and intenance management the Review manuals on road maintenance management the Review manuals on road maintenance management the Review manuals on road maintenance management the Review manuals on road and/or revised by the Phase-II and make their necessary revisions. - nanagement transment the Review management the Review management the Review management and construction supervision. - nanagement transment the Review management the Review management the Review management the Review manuals on routing seminars/OTS on bridge engineering inspections by Sasta inplementing pilot projects on bridge engineering inspections by Ansist implementing pilot projects on bridge engineering inspections by Ansist implementing pilot projects on bridge engineering inspections by Ansist implementing pilot projects on bridge engineering inspections by Ansist implementing pilot projects on bridge engineering inspections by Review manuals on bridge engineering inspections by Review manuals on bridge maintenance management to contend engineering inspection by Review manuals on bridge maintenance management and construction in the Revision developed and/or revised by the Phase-II and make their necessary state manuals on bridge maintenance management for contend engineering inspection by Review manuals on bridge maintenance engineering inspection by Review project expanses - Project continger 1. Assist conducting seminaterance management situations of bridge engineering inspection by Review manuals on bridge engineering inspection by Review manuals on bridge maintenance engineering inspection by Review prevision developed and/or revised by the Phas | 2 Assist implementing pilot projects on road slope statuly and review nanagement by Roy/DGs. - rean reaction of road maintenance management by Roy/DGs. - rean reaction of road maintenance management is mongement and evaluate situations of road maintenance management and eveloped and/or revised by the Phase-II and make their necessary revisions. - rean reaction and evaluates intenance management is Rogional Offices and Regional Office 2 Assist implementation developed and/or revised by the Phase-II and make their necessary supervision developed and/or revised by the Phase-II and make their necessary acuints and evaluation invited and revised and/or revised by the Phase-II and make their necessary and revision of pilot projects - Departenerse and revaluation reveloped and/or revised by the Phase-II and | Assist implementing pilot projects on rand solve stability and revealer and construction supervisions. Anonion and evaluate situations of road maintenance management by Ros/DEOs. Monitor and evaluate situations of road maintenance management developed and/or revised by the Phase-II and make their necessary revisions. Review manuals on road maintenance management by Ros/DEOs. Assist conducting seminars/OJTs on bridge maintenance and road slope protection Assist conducting seminars/OJTs on bridge maintenance management developed and/or revised by the Phase-II and make their necessary revisions. Assist conducting seminars/OJTs on bridge maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs. Assist implementing pilot projects on bridge engineering inspections by Monitor and evaluate situations of bridge maintenance management and construction Assist implementing pilot projects on bridge maintenance management and construction supervisions. Assist implementing pilot projects on bridge maintenance engineering inspections by Ros/DEOs. Ros/DEOs. Ros/DEOs. Ros/DEOs. Ros/DEOs. Ros/DEOs. Assist implementing pilot projects on bridge maintenance engineering inspections by Ros/DEOs. Assist implementing pilot projects on bridge maintenance engineering inspections by Ros/DEOs. Ros/DEOs. Ros/DEOs. Ros/DEOs. Ros/DEOs. Ros/DEOs. C/P trainings in Japan and/or third Minitor and keptin prosection and/or review by the Phase-II and make their necessary Anonicor and devaluation at Central Office (CAR, II, III, III, III, III, III, III, II | 2 Assist implementing pilot projects on road slope statulty and retevant ULS. 3 Monitor and evaluate situations of road maintenance management a Review manuals on road maintenance management by ROs/DEOS. 3 Monitor and evaluate situations of road maintenance management a Review manuals on road maintenance management by ROs/DEOS. 4 Review manuals on road maintenance management by ROs/DEOS. 3 Monitor and evaluate situations of road maintenance management developed and/or revised by the Phase-II and make their necessary revisions. 4 Review manuals on road maintenance management by ROs/DEOS. 3 Monitor and evaluate situations of bridge maintenance management by ROs/DEOS. 3 Assist implementing pilot projects on bridge maintenance engineering inspections by to developed and/or revised by the Phase-II and make their necessary revisions. 4 Monitor and evaluate situations of bridge maintenance engineering inspections by to the Ros and Regional Offices and Regional Offices of IL NII, VII, VII, VII, XI, and XIII) for YWG and CWG 2 Assist implementing pilot projects on bridge maintenance engineering inspections by to the Ros and Regional offices and relevant OITS. 3 Assist implementing pilot projects on bridge maintenance engineering inspections by to ther as necessary equipment for the Project implementation at Central Office | 2 Assist implementing pilot projects on road slope stability and relevant DJIS. 3 Monitor and evaluate situations of road maintenance management by Ros/DEOS. 3 Monitor and evaluate situations of road maintenance management and eveloped and/or revised by the Phase-II and make their necessary revisions. 4 Review manuals on road maintenance management and eveloped and/or revised by the Phase-II and make their necessary revisions. 4 Review manuals on road maintenance management by Ros/DEOS. 5 Assist conducting seminars/OJTs on bridge maintenance management by Sustainability Program for concerned engineers of all ROs/DEOS. 2 Assist conducting seminars/OJTs on bridge repair of and concerned engineers of all ROs/DEOS. 2 Assist conducting seminars/OJTs on bridge repair for concerned engineers of all ROs/DEOS. 3 Assist conducting seminars/OJTs on bridge engineering inspections by Sustainability Program for concerned engineers of all ROs/DEOS. 3 Assist conducting seminars/OJTs on bridge repair (1) 4 Review manuals on road maintenance management developed and/or revised by the Phase-II and make their necessary revisions. 1 Assist conducting seminars/OJTs on bridge maintenance management by for TWG and CWG 2 Assist conducting seminars/OJTs on bridge repair and relevant OJTs. 3 Assist conducting seminars/OJTs on bridge repair and relevant OJTs. 4 Review manuels and relevant OJTs. 5 Assist conducting seminars/OJTs on bridge repair (2) 5 Assist conducting seminars/OJTs on bridge repair (2) 6 Assist conducting seminars/OJTs on bridge repair (2) 7 Assist conducting seminars/OJTs on bridge repair (2) 7 Assist conducting seminars/OJTs on bridge repair (2) 8 Assist conducting seminars/OJTs on bridge repair (2) 9 Assist conducting seminars/OJTs on bridge repair (2) 9 Assist conducting seminary of and CWG 9 Assist conduc | 2 Assist implementing pilot projects on road slope stability and relevant Outs. 3 Monitor and evaluate situations of road maintenance management by Ros/DEOs. 3 Monitor and evaluate situations of road maintenance management by Ros/DEOs. 4 Review manuals on road maintenance management by the Phase-II and make their necessary revisions. 4 Review manuals on road maintenance management by the Phase-II and make their necessary revisions. 5 Road slope protection developed and/or revised by the Phase-II and make their necessary revisions. 6 Review manuals on road maintenance management by the Phase-II and make their necessary revisions. 7 Road slope protection developed and/or revised by the Phase-II and make their necessary revisions. 1 Assist conducting seminars/OJTs on bridge maintenance management by the Phase-II and make their necessary revisions. 1 Assist conducting seminars/OJTs on bridge maintenance management by the Phase-II and make their necessary revisions. 1 Assist conducting seminars/OJTs on bridge maintenance management by the Phase-II and make their necessary revisions. 1 Assist conducting seminars/OJTs on bridge maintenance management by the Phase-II and make their necessary revisions. 1 Assist conducting seminars/OJTs on bridge maintenance management by the Phase-II and make their necessary revisions by the phase protection by the phase protection by the phase ph | 2 Assist implementing pilot projects on road slope stability and relevant Outs. 3 Monitor and evaluate situations of road maintenance management by Ros/DEOs. 3 Monitor and evaluate situations of road maintenance management the structure in the structure of the structure in the structu | Assist implementing pilot projects on road slope stability and relevant UJIS. Assist implementing pilot projects on road slope stability and relevant UJIS. Monitor and evaluate situations of road maintenance management to relevant to the robut of the r | Assist implementing pilot projects on road slope stability and relevant UJIS. Assist implementing pilot projects on road slope stability and relevant UJIS. Assist implementing pilot projects on road slope stability and relevant UJIS. Assist implementing pilot projects on road slope stability and relevant UJIS. Assist implementing pilot projects on road slope stability and relevant UJIS. Assist implementing pilot projects on road slope stability and relevant UJIS. Assist implementing pilot projects on road slope stability and relevant UJIS. Assist implementing pilot projects on road slope stability and relevant UJIS. | Activities Inputs Activities 1. Participation of C/Ps and other |
| Assist conducting semination (1) register contention emplores and maintenance management (s) contention emplores and maintenance (c) contention emplores and maintenance contraction system (s) contract (s) contention emplores and maintenance management (s) contention emplores and maintenance management (s) contention emplores and maintenance management (s) contention endored (maintenance management). And and contende emplores of all (COD)CS. Assist implementing pilor, polyces on bridge empletions of tridge maintenance and proving and evaluation extensions. Assist implementing pilor, polyces on bridge maintenance emplores and maintenance management and construction system evaluation are content engines at laticus in the their necessary with matagement endores and maintenance management in pilor polices on the provision of equipment in content endores at laticus in the their necessary for the police (contention endored and/or evolad bringe maintenance management endored and/or evolad bringe maintenance management endores at laticus in the their n | Assist conducting seminaryOTS on roud stores stability manuagement by Sustainability Program for concerned engineers of all ROS/DEGA. Lement concerned engineers of all ROS/DEGA. Lement concerned engineers of all ROS/DEGA. 2 Assist implementing pilot projeks on road store stability and relevant OTRs. Nontion and contacting participation and manuagement and ensity and relevant OTRs. Lement concerned engineers of all ROS/DEGA. 2 Assist implementing pilot projeks on road store stability and materiment target maintenance management target projeks on road store stability and materiment and materimer transgement target projeks on road store stability and materimer management target projeks on road store stability and materimer target projeks on road store protection supervision. Lement concerned engineers in tropication supervision. Project Condition concerned engineers in tropication supervision. 2 Assist implementing pilot projeks on bridge ruptin and relevant of the project on bridge ruptin and relevant OTRs. Nontion and countenance and region offices and Regional Offices in the tropication supervision. Project Condition concerned engineers in the tropication supervision. 3 Assist implementing pilot projeks on bridge ruptin and relevant OTRs. Assist implementing staff Stability forgans of the Project on the tropication supervision. 3 Assist implementing pilot projeks on bridge ruptin and relevant OTRs. Assist implementing staff Assist implementing staff Assist implemention and relevant on the relevant | 1 Assist conducting seminars/OTS on road maintenance management by ROS/DEOs. 1. CP Project Manager 2 Sustainability Program for concerned engineers of all ROS/DEOs. 1. CP Project Manager 3 Monifor and evaluates situations of read maintenance management by ROS/DEOs. 1. CP Project Manager 3 Monifor and evaluates situations of read maintenance management management management management by manuals on road anintenance management by manuals on road and maintenance management by manuals on road and construction suprimations by the Phase-II and make their necessary revisions. 1. Assist conducting seminars/OTS on bridge maintenance management by an and/or revised by the Phase-II and make their necessary revisions. 2. Supporting and the concerned engineers of all ROS/DEOs. 2. Supporting and the concerned engineers of all ROS/DEOs. 3. Assist conducting seminars/OTS on bridge requires in project and and/or revised by the Phase-II and make their necessary equipment for the Project and Regional Offices (CAR, II, III, YII, XI, XI, AIXIII) 2. Suitable office spaces with mecessary equipment for the Project and regional offices (CAR, II, III, YII, XI, XIII) 3. Assist implementing pilot projects on bridge maintenance and and or revised by the Phase-II and make their necessary equipment for the Project and Regional Offices (CAR, II, III, YII, XI, XIII) 3. Project apprint for the Project and Regional Offices (CAR, II, III, YII, XI, XIII) | 1 Assist conducting seminars/OTIS on road maintenance management by advisor implementing projects or road slope supervision. 1 Experts 1 CP 2 Monitor and evaluate situations of road maintenance management by advisor project Manager 2 Assist implementing proprises of road maintenance management by molect projects and slope supervisions. 1 Experts 2 Project Manager 2 monitor and evaluate situations of road maintenance management by NOS/DEOs. 3 Monitor and evaluate situations of road maintenance management and construction supervision. 1 Experts 2 Project Manager 2 CP 3 Monitor and evaluate situations of road maintenance management and construction supervision. 1 Experts 2 Project Manager 2 CP 4 evoloped and/or revised by the Phase-II and make their necessary travisions. 2 Monitor and evaluate situations of introput evaluation and evaluate situations of all ROS/DEOs. 2 Monitor and Regional Office and Regional Offices in Project Conditation 2 Assist implity Program for concerned engineers of all ROS/DEOs. 3 Special bridge repair (1) 2 Monitor and evaluate situations of all ROS/DEOs. 3 Special bridge repair (2) 3 Sporting and CWG 3 Assist implity Program for concerned engineers of all ROS/DEOs. 3 Special bridge repair (2) 3 Sporting and CWG 3 Sporting and CWG 3 Sporting and CWG 3 Assist implity Program for concerned engineers of all ROS/DEOs. 3 Sporting and CWG 3 Sporting and CWG 3 Sp | 1 Assist conducting seminars/OTIs or real maintenance management by sustainability Program for concerned engineers of all Ros/DEOs. 1 Experts conducting seminars/OTIs or real antiversion of real maintenance management construction supervision of read maintenance management conducting seminars/OTIS on bridge maintenance management conducting repair and revision soft and maintenance management conducting seminars/OTIS on bridge maintenance management concerned ongineers of all ROS/DEOs. 1 Experts conducting reporting and relevant OTIS on bridge maintenance management concerned ongineers of all ROS/DEOs. 2 Assist conducting seminars/OTIS on bridge maintenance management concerned ongineers of all ROS/DEOs. 2 Assist conducting seminars/OTIS on bridge maintenance management concerned ongineers of all ROS/DEOs. 2 Assist conducting seminars/OTIS on bridge maintenance management concerned ongineers of all ROS/DEOs. 2 Assist conducting seminars/OTIS on bridge maintenance management concerned ongineers of all ROS/DEOs. 2 Assist conducting seminars/OTIS on bridge maintenance management concerned ongineers of all ROS/DEOs. 2 Assist conducting seminars/OTIS on bridge maintenance management concerned onginecers on the revise on the revision so the rev | 1 Assist conducting seminars/O/Ts on road implementations of road maintenance management by Nos/DEOs. 1 Expense state 1. C/P 1. C/P 2 Assist implementing pilot projects on road slope stability and relevant OJTs. 1 Expense state 1. C/P 1. C/P 3 Monitor and evaluates of all ROS/DEOs. 1 Expense state 1. C/P 1. C/P 1. C/P 3 Monitor and anintenance management by Nos/DEOs. 1 Expense state 1. C/P 1. C/P 1. C/P 3 Monitor and evaluates of and maintenance management by Nos/DEOs. 1 Expense state 1. C/P 1. C/P 1. C/P 4 Review manuals on road alope stability and relevant OJTs on bridge maintenance management developed and/or revised by the Phase-II and make their necessary revisions. 1. Resist conducting seminars/OJTs on bridge maintenance management by management developed and/or revised by the Phase-II and make their necessary revisions. 2. Road maintenance management by the Phase system 2. Suitable office spaces with necessary equipment for the Project management by the Phase-II and make their necessary equipment for the Project by the Phase-II and make their necessary 3. Suit implementing pilot projects on bridge repair and relevant OJTs< | 1 Assist conducting seminars/OTFs on road maintenance management by sustainability Program for concerned engineers of all ROs/DEOs. 1 Experts 1 Experts 1 C/P | 1 Assist conducting seminars/OJTs on road maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs. Japanese stoe I. Experts I. CP Concerned crigineers in Project 2 Assist implementing pilot projects on road slope stability and relevant OJTs. I. Experts I. CP concerned crigineers in Project 3 Monitor and evaluate situations of road maintenance management by Ros/DEOs. I. Experts I. CP concerned crigineers in Project 3 Monitor and evaluate situations of road maintenance management and construction supervision developed and/or revised by the Phase-II and make their necessary revisions. I. Experts I. CP concerned crigineers in Project 4 Review manuals on road maintenance management developed and/or revised by the Phase-II and make their necessary revisions. - Reader/Bridge maintenance management developed and/or revised by the Phase-II and make their necessary revisions. - Road slope protection developed and/or revised by the Phase-II and make their necessary revisions. - Road slope protection developed and/or revised by the Phase-II and make their necessary revisions. - Road slope maintenance management developed and/or revised by the Phase-II and make their necessary revisions. - Road slope protection conterpart personnel from conterpart personnel | 1 Assist conducting seminars/OJTs on road maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs. Japanese stole Japanese stole Jumppure stole 2 Sustainability Program for concerned engineers of all ROs/DEOs. J. Experts I. C/P concerned engineers in Project 3 Monitor and evaluate situations of road maintenance management by Ros/DEOs. J. Experts I. C/P concerned engineers in Project 3 Monitor and evaluate situations of road maintenance management by Ros/DEOs. J. Experts I. C/P concerned engineers in Project 4 Review manuals on road maintenance management by Ros/DEOs. Project Manager project Manager activities is ensured. 4 Review manuals on road maintenance management by the Phase-II and make their necessary revisions. Project Coordinator Project Coordinator Project Coordinator 1 Assist conducting seminars/OJTs on bridge maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs. Sustainability Program for concerned engineers of all ROs/DEOs. Supporting staff | 1 Assist conducting seminars/O/Ts on road maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs. Japanese stole I. C/P concerned engineers in Project 2 Assist implementing pilot projects on road slope stability and relevant O/Ts. I. Experts I. C/P concerned engineers in Project 3 Assist implementing pilot projects on road slope stability and relevant O/Ts. I. Experts I. C/P concerned engineers in Project 3 Monitor and evaluate situations of road maintenance management by ROs/DEOs. Project Manager activities is ensured. 4 Review manuals on road maintenance management advolcr revised by the Phase-II and make their necessary revisions. - Road maintenance management - Other Counterpart personnel from developed and/or revised by the Phase-II and make their necessary revisions. - Road slope protection - Other Counterpart personnel from Conterpart personnel from 4 - Deputy Project Manager - Other Counterpart personnel from - Other Counterpart personnel from 4 - Review manuals on road maintenance management - Project Coordinator - Other Counterpart personnel from 4 - Deputy Project Manager - Other Counterpart personnel from - Other Counterpart personnel from 6 - Exercited by the Phase-II and make their neccessary revisions. - Bridg | 1 Assist conducting seminars/O/Ts on road maintenance management by Sustainability Program for concerned engineers of all ROs/DEOs. Japanese stole J. C/P concerned orgineers in Project 2 Assist implementing pilot projects on road slope stability and relevant O/Ts. 1. Experts 1. C/P concerned orgineers in Project 3 Monitor and evaluate situations of road maintenance management and construction supervision - Team Leader/Bridge maintenance - Project Manager activities is ensured. 4 Review manuals on road maintenance management and construction supervision. - Road maintenance management - Road slope protection - Other Counterpart personnel from | 1 Assist conducting seminars/OJTs on road maintenance management by Japanese stoc Japanese stoc 1 Assist conducting seminars/OJTs on road maintenance management by J. Experts I. C/P concerned engineers in Project 2 Assist implementing pilot projects on road slope stability and relevant OJTs. - Team Leader/Bridge maintenance - Project Manager activities is ensured. 3 Monitor and evaluate situations of road maintenance management by ROs/DEOs. - Deputy Project Manager - Deputy Project Manager | |
| Activities Activities Activities Inputs Inputs additional conducting actinemed on read maintenance management by ability for and abore shift ability forgame for our control degrees and the analytement and abore shift ability forgame. Inputs Inputs ability forgam for control of road maintenance management by and control. Inputs Inputs Inputs ability forgam for control of road maintenance management by and control. Inputs Inputs Inputs and one protection Control of road maintenance management by and control. Inputs Inputs Inputs and one protection Control of road maintenance management by and control. Inputs Onpect control of road maintenance management of road of road and control of road | Activities Activities molicing sentancOTTs on road maincence management by molicing sentancOTTs on road grant and maincence management by molicing sentancOTTs on road grant and maincence management by molicing sentancOTTs on road grant and maincence management by molicing sentancOTTs on bridge maintenance management by address of all ROs/DCs. 1 Iponts 1. Participation of CPS and other concerned enginess in Project end enter situations of road maintenance management by molicing sentancOTTs on bridge maintenance management by address of all ROs/DCs. 1. Corport to road and maintenance management by molicing sentance/OTTS and bridge maintenance management occurred enginess in Project 1. Participation of CPS and other concerned enginess in Project each other endertage sentance/OTTS on bridge enginest ind endoter revised by the Phase-II and make heir necessary and heighementing policing sentance/OTS on bridge repair and relocan OTEs. 2. Papity Project Manager 1. Papity Project Manager each revised by the Phase-II and make heir necessary and heighementing policing sentance/OTEs on bridge repair and relocan OTEs. 2. Suitable office conditions on constant and revised and revised and policing repair and relocan OTFs. 1. Papity Project OTES of the Project on other revised by the Phase-II and make heir necessary and Regional Offices (CAR, II, III, vitro, VII, XI, and XIII) molicing and revised by the Phase-II and make heir necessary works. 3. Suitable office spaces with the Project of bridge repair and relocan OTFs and ROS of the revised by the Phase-II and make heir necessary or road and andinterance contrend organes of traget ROs/DFSG. 1. | Activities Inputs Activities Activities Inputs Adding seminary Corrected engineers of all Nos/DEOs. Imputs Imputs ability Program for concerned engineers of all Nos/DEOs. Imputs Imputs ability Program for concerned engineers of all Nos/DEOs. Imputs Imputs ability Program for concerned engineers of all Nos/DEOs. Imputs Imputs a maintenance management by Roo/DEOs. Imputs Project Manager a maintenance management by magnetic Imputs Project Coordinator a maintenance management by magnetic Imputs Project Coordinator a maintenance management by magnetic Imputs Project Coordinator a maintenance management by magnetic Imputs Imputs a maintenance management by magnetic Deputy Project Manager Imputs a maintenance management by magnetic Deputy Project Manager Imputs a maintenance management by magnetic Deputy Project Manager Imputs a moder revised by the Phase-II and malatenance Deputy Project Manager Imputs a moder revised by the Phase-II and relevant OITs Deputy Projec | Activities Inputs Activities Activities Activities and reducts seminaryOITs on read maintenance management by modeling projects on read maintenance management by manuagement by manuagement and evaluate situations of read maintenance management by ROS/DEOs. I. Papers and the construction sprease stability and relevant OTFs r and activities is on read maintenance management and construction spervisions. I. Strests I. Project Manager r and activities is on read maintenance management and construction spervisions. I. Strests Project Manager r annuats on road maintenance management and construction spervisions. I. Brader/Bridge maintenance Project Manager r annuats on road maintenance management and construction spervisions. I. Add stope protection Other Counterpart personnel from r and vor travised by the Phase-II and make their necessary revisions. I. Add stope protection Other Counterpart personnel from and bility Program for concerned engineers of all ROS/DEOs. I. Manager Project Manager and bility Program for concerned engineers of all ROS/DEOs. Special bridge maintenance I. Writ, XI, and XIII) and bility Program for concerned engineers of all ROS/DEOs. Special bridge maintenance I. Writ, XI, and XIII) and lity Program for concerned engineers of all ROS/DEOs. | Activities Activities Inputs ability Program for concerned engineers of all RoyDEO. Imputs stide Philippine side Philippine side ability Program for concerned engineers of all RoyDEO. Imputs and engineers of all RoyDEO. Imputs Imputs and undergram for concerned engineers of all RoyDEO. Imputs Project Manager Imputs and under engineers of all RoyDEO. Imputs and cream of Concerned engineers of all RoyDEO. Imputs Project Manager r manuals on road maintenance management by ROyDEOS. Imputs Project Manager Imputs r manuals on road maintenance management r manuals on road maintenance management r manuals on road maintenance management to management Road slope protection Road slope maintenance Imputs onducting geninars/OITs on bridge maintenance management Road slope motection Road slope maintenance Road slope maintenance C/AR, II, III, VII, VIII, XI, and XIII ability Program for concerned engineers of all ROS/DEOs. Supporting staff Imputs Imputs conducting geninars/OITs on bridge maintenance management RoyDEOs. Supporting and CWG Imputs conducting geninars/OITS on bridge maintenance of and/Or revised by the Phase-II and make their necessary </td <td>Activities Inputs Inputs Activities Activities Inputs Inputs ability Program for concerned engineers of all ROs/DEOs. Japanese side Philippine side I. Project Manager ability Program for concerned engineers of all ROs/DEOs. 1. Experts 1. C/P 1. Project Manager r and evaluate situate situates and construction supervisions 1. Experts 1. C/P 1. Project Manager r and evaluate situates management to onducting seminars/OTS on bridge maintenance management to onducting seminars/OTS on bridge maintenance management to concerned engineers of all ROs/DEOs. 1. Project Manager or and outier visued by the Phase-II and make their necessary revisions. 2. Road maintenance management to onducting seminars/OTS on bridge maintenance management to onducting seminars/OTS on bridge engineering inspections by 2. Road maintenance management to the roject manager or and vocting seminars/OTS on bridge engineering inspections by 5. Special bridge repair (1) 2. Suptoting saff onducting seminars/OTS on bridge engineering inspections by 5. Special bridge repair (2) 3. Suptoting saff onducting seminars/OTS on bridge repair of all ROs/DEOs. 5. Special bridge repair (1) 3. Suptoting saff</td> <td>Activities Inputs Inputs Activities Activities Inputs Inputs anducting seminars/OJTs on road maintenance management by trogram for concerned engineers of all ROs/DEOs. Japanese side Pinlippine side andiverting pilot projects on road slope stability and relevant OJTs. Japanese side Pinlippine side I. Project Manager and evaluate situations of road maintenance management by ROs/DEOs. I. Experts I. C/P I. C/P ar and evaluate situations of road maintenance management by ROs/DEOs. I. Experts I. C/P I. C/P ar and evaluate situations of road maintenance management to management and construction supervision. I. C/P I. C/P I. Project Manager and other valuate situations of road maintenance management to management and construction supervision. Project Condinator I. C/P I. Project Condinator conducting seminars/OTS on bridge maintenance management and for concerned engineers of all ROs/DEOs. Project and Regional Office and Regional Office and Regional Offices I. M. M.</td> <td>ActivitiesInputsInputsActivitiesActivitiesability Program for concerned engineers of all ROs/DEOs.Japanese sidePhilippine sideability Program for concerned engineers of all ROs/DEOs.Japanese sidePhilippine sideability Program for concerned engineers of all ROs/DEOs.Japanese sidePhilippine sideability Program for concerned engineers of all ROs/DEOs.1. Experts1. C/Pand/on revised projection of road maintenance management by ROs/DEOs.1. Experts1. C/Pand/on revised by the Phase-II and make their necessary revision.2. Road stope protection2. Project Managerped and/or revised by the Phase-II and make their necessary revision.2. Road stope protection2. Road stope repairconducting seminars/OJTs on bridge maintenance management billy Program for concerned engineers of all ROs/DEOs.2. Supporting staffability Program for concerned engineers of all ROs/DEOs.2. Supporting staffability Program for concerned engineers of all ROs/DEOs.2. Suptorting staffability Program for concerned engineers of all ROs/DEOs.2. Suptorting staff</td> <td>Activities Inputs Inputs Activities Activities Inputs ability Program for concerned engineers of all ROs/DEOs. Japanese side Philippine side ability Program for concerned engineers of all ROs/DEOs. Japanese side Philippine side and other and concerned engineers of all ROs/DEOs. 1. Experts 1. C/P and evaluate situations of road maintenance management wannuals on road maintenance management wannuals on road maintenance management bed and/or revised by the Phase-II and make their necessary revisions. 1. Experts 1. C/P ped and/or revised by the Phase-II and make their necessary revisions. Project Coordinator 2. Deputy Project Manager ped and/or revised by the Phase-II and make their necessary revisions. Project Coordinator 2. Other Counterpart personnel from conducting seminars/OJTs on bridge maintenance and router management bould by Program for concerned engineers of all ROs/DEOs. Project counterpart personnel from conducting seminars/OTTs on bridge maintenance management bould program for concerned engineers of all ROs/DEOs. Project management ability Program for concerned engineers of all ROs/DEOs. Project management Project Manager ability Program for concerned engineers of all ROs/DEOs. Project conuterpart personnel from</td> <td>Activities Inputs Inputs Activities Activities Inputs Inputs Activities Activities Inputs Inputs ability Program for concerned engineers of all ROs/DEOs. Japanese side Philippine side I. Participation of C/Ps and other ability Program for concerned engineers of all ROs/DEOs. 1. Experts 1. C/P I. Participation of C/Ps and other and evaluate situations of road maintenance management by ROs/DEOs. 1. Experts 1. C/P concerned engineers in Project and evaluate situations of road maintenance management by ROs/DEOs. 1. Experts 1. C/P concerned engineers in Project and evaluate situations of road maintenance management by ROs/DEOs. - Team Leader/Bridge maintenance - Project Manager concerned engineers in Project and other evaluate situations of road maintenance management - Project Coordinator - Other Counterpart personnel from control froe and Regional Offices is ensured. ped and/or revised by the Phase-II and make their necessary revisions. - Bridge repair - Other Counterpart personnel from ender and/or revised by the Phase-II and make their necessary revisions. - Bridge repair - Other Counterpart personnel from</td> <td>Activities Inputs Inputs Activities Activities Activities Activities Activities Inputs Activities Activities Inputs Activities Inputs Inputs Inplementing seminars/OJTs on road maintenance management by Japanese side Philippine side Inplementing pilot projects on road slope stability and relevant OJTs. I. Experts I. CP In and evaluate situations of road maintenance management by ROs/DEOs. Team Leader/Bridge maintenance Project Manager In and evaluate situations of road maintenance management and construction supervision - Road maintenance management - Project Coordinator Index and/or revised by the Phase-II and make their necessary revisions. - Road slope protection - Other Counterpart personnel from</td> <td>ActivitiesInputsActivitiesActivitiesActivitiesActivitiesability Program for concerned engineers of all ROs/DEOs.Japanese sideability Program for concerned engineers of all ROs/DEOs.1. Expertsimplementing pilot projects on road slope stability and relevant OJTs.1. Expertsrand evaluate situations of road maintenance management by ROs/DEOs.1. C/Prand evaluate situations of road maintenance management by ROs/DEOs.1. C/Prand evaluate situations of road maintenance2. Deputy Project Managerrand evaluate situations of road maintenance2. Deputy Project Manager</td> <td></td> | Activities Inputs Inputs Activities Activities Inputs Inputs ability Program for concerned engineers of all ROs/DEOs. Japanese side Philippine side I. Project Manager ability Program for concerned engineers of all ROs/DEOs. 1. Experts 1. C/P 1. Project Manager r and evaluate situate situates and construction supervisions 1. Experts 1. C/P 1. Project Manager r and evaluate situates management to onducting seminars/OTS on bridge maintenance management to onducting seminars/OTS on bridge maintenance management to concerned engineers of all ROs/DEOs. 1. Project Manager or and outier visued by the Phase-II and make their necessary revisions. 2. Road maintenance management to onducting seminars/OTS on bridge maintenance management to onducting seminars/OTS on bridge engineering inspections by 2. Road maintenance management to the roject manager or and vocting seminars/OTS on bridge engineering inspections by 5. Special bridge repair (1) 2. Suptoting saff onducting seminars/OTS on bridge engineering inspections by 5. Special bridge repair (2) 3. Suptoting saff onducting seminars/OTS on bridge repair of all ROs/DEOs. 5. Special bridge repair (1) 3. Suptoting saff | Activities Inputs Inputs Activities Activities Inputs Inputs anducting seminars/OJTs on road maintenance management by trogram for concerned engineers of all ROs/DEOs. Japanese side Pinlippine side andiverting pilot projects on road slope stability and relevant OJTs. Japanese side Pinlippine side I. Project Manager and evaluate situations of road maintenance management by ROs/DEOs. I. Experts I. C/P I. C/P ar and evaluate situations of road maintenance management by ROs/DEOs. I. Experts I. C/P I. C/P ar and evaluate situations of road maintenance management to management and construction supervision. I. C/P I. C/P I. Project Manager and other valuate situations of road maintenance management to management and construction supervision. Project Condinator I. C/P I. Project Condinator conducting seminars/OTS on bridge maintenance management and for concerned engineers of all ROs/DEOs. Project and Regional Office and Regional Office and Regional Offices I. M. | ActivitiesInputsInputsActivitiesActivitiesability Program for concerned engineers of all ROs/DEOs.Japanese sidePhilippine sideability Program for concerned engineers of all ROs/DEOs.Japanese sidePhilippine sideability Program for concerned engineers of all ROs/DEOs.Japanese sidePhilippine sideability Program for concerned engineers of all ROs/DEOs.1. Experts1. C/Pand/on revised projection of road maintenance management by ROs/DEOs.1. Experts1. C/Pand/on revised by the Phase-II and make their necessary revision.2. Road stope protection2. Project Managerped and/or revised by the Phase-II and make their necessary revision.2. Road stope protection2. Road stope repairconducting seminars/OJTs on bridge maintenance management billy Program for concerned engineers of all ROs/DEOs.2. Supporting staffability Program for concerned engineers of all ROs/DEOs.2. Supporting staffability Program for concerned engineers of all ROs/DEOs.2. Suptorting staffability Program for concerned engineers of all ROs/DEOs.2. Suptorting staff | Activities Inputs Inputs Activities Activities Inputs ability Program for concerned engineers of all ROs/DEOs. Japanese side Philippine side ability Program for concerned engineers of all ROs/DEOs. Japanese side Philippine side and other and concerned engineers of all ROs/DEOs. 1. Experts 1. C/P and evaluate situations of road maintenance management wannuals on road maintenance management wannuals on road maintenance management bed and/or revised by the Phase-II and make their necessary revisions. 1. Experts 1. C/P ped and/or revised by the Phase-II and make their necessary revisions. Project Coordinator 2. Deputy Project Manager ped and/or revised by the Phase-II and make their necessary revisions. Project Coordinator 2. Other Counterpart personnel from conducting seminars/OJTs on bridge maintenance and router management bould by Program for concerned engineers of all ROs/DEOs. Project counterpart personnel from conducting seminars/OTTs on bridge maintenance management bould program for concerned engineers of all ROs/DEOs. Project management ability Program for concerned engineers of all ROs/DEOs. Project management Project Manager ability Program for concerned engineers of all ROs/DEOs. Project conuterpart personnel from | Activities Inputs Inputs Activities Activities Inputs Inputs Activities Activities Inputs Inputs ability Program for concerned engineers of all ROs/DEOs. Japanese side Philippine side I. Participation of C/Ps and other ability Program for concerned engineers of all ROs/DEOs. 1. Experts 1. C/P I. Participation of C/Ps and other and evaluate situations of road maintenance management by ROs/DEOs. 1. Experts 1. C/P concerned engineers in Project and evaluate situations of road maintenance management by ROs/DEOs. 1. Experts 1. C/P concerned engineers in Project and evaluate situations of road maintenance management by ROs/DEOs. - Team Leader/Bridge maintenance - Project Manager concerned engineers in Project and other evaluate situations of road maintenance management - Project Coordinator - Other Counterpart personnel from control froe and Regional Offices is ensured. ped and/or revised by the Phase-II and make their necessary revisions. - Bridge repair - Other Counterpart personnel from ender and/or revised by the Phase-II and make their necessary revisions. - Bridge repair - Other Counterpart personnel from | Activities Inputs Inputs Activities Activities Activities Activities Activities Inputs Activities Activities Inputs Activities Inputs Inputs Inplementing seminars/OJTs on road maintenance management by Japanese side Philippine side Inplementing pilot projects on road slope stability and relevant OJTs. I. Experts I. CP In and evaluate situations of road maintenance management by ROs/DEOs. Team Leader/Bridge maintenance Project Manager In and evaluate situations of road maintenance management and construction supervision - Road maintenance management - Project Coordinator Index and/or revised by the Phase-II and make their necessary revisions. - Road slope protection - Other Counterpart personnel from | ActivitiesInputsActivitiesActivitiesActivitiesActivitiesability Program for concerned engineers of all ROs/DEOs.Japanese sideability Program for concerned engineers of all ROs/DEOs.1. Expertsimplementing pilot projects on road slope stability and relevant OJTs.1. Expertsrand evaluate situations of road maintenance management by ROs/DEOs.1. C/Prand evaluate situations of road maintenance management by ROs/DEOs.1. C/Prand evaluate situations of road maintenance2. Deputy Project Managerrand evaluate situations of road maintenance2. Deputy Project Manager | |
| Internet and concerned to Phyl 1 and the concerned on grammer of the concerned on grammer of the concerned engineer of all ROODDCs. Internet Internet Internet constraining grammer of concerned engineer of all ROODDCS. constraining grammer of concerned angineer of all ROODDCS. Lepters | Internet and the state and other and other restricts Artrifts Inputs Artrifts Artrifts Inputs Inputs Artrifts Artrifts Inputs Inputs anability Program for concerned angineers of all ROMDECs. 1. Experts 1. Experts rest conducting seminary OTIs on road maintenance management by an advector and restance OTIs 1. Experts 1. Perincipation of CIPs and other encodering annicement emanagement and internet encodering annicement emanagement of exa conducting annicement emanagement and allop protein of CIPs and other encodering annicement emanagement and allop protein big and slop protein big attrict and evaluation of the Big maintenance management of exa conducting annicement emanagement and encodering annicement and environ big estation diversity in protein big astation diversity and annicement and encodering annicement and environ big estation diversity in protein and encodering annicement emanagement and encodering annicement endormed annicement and encodering annicement and environ big estation diversity in protein encomed endormed and encodering inspections by endormed and encodering inspections by endormed and encodering inspections by encodering annicement endormed and encodering inspections by encodering annicement endormed and encodering inspections by encoderind annicement endormed and encodering inspections by e | an on ruge numerator. Activities Inputs Concerned DPWH staff. Activities Activities Activities Inputs Activities Activities Inputs Inputs Activities Activities Inputs Inputs Activities Activities Inputs Inputs attain process of road maintenance management by alter and evaluate situations of road maintenance management by alter and evaluate situations of road maintenance management by asst conducting seminaryOTIS on hidge repair I. Expens Proposition of CPs and other encorned anginees of all ROs/DEOs. attain and activities I. Expens I. CP Proposition of road maintenance management by and activities is ensured. cloped and/or revised by the Plase-II and make their recessary revisions. I. CP Proposition of CPs and Rogen and conservation and Rogenal Differs I. Provision of CPs and Rogenal Differs cloped and/or revised by the Plase-II and make their recessary revisions. Road slope protection to row remands or road maintenance management by ast conducting seminaryOTIS on bridge explication generation and relation is st conducting seminaryOTIS on bridge explication and relation into and evaluate situations of bridge maintenance management for concerned angineers of all ROs/DEOS. I. Provision of CPs and Rogenal Offices in Project Activities is ensured. ast conducting seminaryOTIS on bridge explication grant concerned angineers of and Rogenal Differs I. CP I. Provision of the Project S | are or orget an ortuget is transformation sit conducting seminars/OTIS on road maintenance is transformation sit implementing projects on concerned engineers of all ROS/DEGs. Inputs Inputs Arthrite Arthrite Inputs is transformation sit implementing sit implementing project road maintenance developed and/or revised by the Phase II and make their necessary revision. Inputs Inputs is transformation and evaluate sit implementing project road maintenance developed and/or revised by the Phase II and make their road software for analytics is ensured. I. Prirtipation of CPs and other concerned engineers in Project increated engineers in Project | an on toge insumedation Activities an one of the propertion Activities Activities an one of a list conducting seminares/OTS on road miniterance management by the concerned on gineers of all ROADEOs. Japanese side Philippine side is it conducting seminares/OTS on road miniterance management by the one and slope sublity and relevant OTS. Japanese side Philippine side I. Philippine side is it implementing pilo projects on road slope sublity and relevant OTS. 1. Experts Project Manager I. Project Manager rise and evaluate situations of road maintenance management by ROADEOS. 1. Experts Project Manager I. Project Manager rise conducting seminare/OTS on bridge maintenance management by nor and evaluates situations of road maintenance management by ROADEOS. Special bridge repair I. Project Coordinator sist conducting seminare/OTS on bridge reprint and constructions spections spection Road slope protection CAR, I. III, VII, VIII, XI, and XIII) sist conducting seminare/OTS on bridge reprint and reterim coccessary revisions. Special bridge reprint Special bridge reprint sist conducting seminares/OTS on bridge reprint and reterant OTS. Special bridge reprint Special bridge reprint I. I. VII, VIII, VIIII, VIII, VIII, VIII | and proper nativenance Activities Inputs concerned DPWH staff. Activities Activities Inputs Inputs Activities Inputs Inputs Inputs <t< td=""><td>no Druge manutationation Activities Inputs Activities Inputs Inputs activities Inputs I. Participation of C/Ps and other concerned engineers of all ROs/DEOs. activities seminars/OITs on road maintenance management by ROS/DEOs. I. Experts I. CP activities is ensured. Project Manager Project Manager activities is ensured. Propertor Manager Project Manager activitie</td><td>no Drugge maintenance Activities concerned DPWH staff. Activities Activities Inputs Activities Inputs Inputs tainability Program for concerned engineers of all ROs/DEOs 1. Experts tainability Program for concerned engineers of all ROs/DEOs 1. CP intor and evaluate situations of road maintenance management view management and construction supervision Project Manager eloped and/or revised by the Phase-II and make their necessary revisions. Contant of Ros and Ros and</td><td>Inducting seminars/OTIs on road maintenance management by tailing seminars/OTIs on road maintenance management by the phase side Inputs concerned DPWH staff. Activities Activities Inputs Inputs Activities Activities Inputs Activities Inputs Inputs Activities Inputs Inputs Activities Inputs Inputs Activities Inputs Inputs ist implementing pilot projects on road slope stability and relevant OJTs. I. Experts infor and evaluate situations of road maintenance management by ROS/DEOs. I. Eacher/Bridge maintenance view manuals on road maintenance management by ROS/DEOs. Project Coordinanger view manuals on road maintenance management beloped and/or revised by the Phase-II and make their necessary revisions. Project Coordinanger - Bridge repair - Other Contrapat personnel from - Other Contrapat personnel from - Special bridge maintenance management by management staff - Other Contrapat personnel from - Statian for concerned engineers of all ROS/DEOs. - Bridge repair - Other Contrapat from - Statian for concerned engineers of all ROS/DEOs. - Special bridge repair (1) - Supporting saff</td><td>Inducting transmenter Activities concerned DPWH staff. Activities Activities Inputs concerned DPWH staff. Activities Activities Inputs Inputs Activities Activities Inputs Inputs Activities Activities Inputs Inputs ist conducting seminars/OJTs on road maintenance management by ist implementing pilot projects on road slope stability and relevant OJTs. Japanese side Philippine side ist implementing pilot projects on road slope stability and relevant OJTs. I. Experts I. C/P ist implementing pilot projects on road slope stability and relevant DJTs. I. Experts I. C/P infor and evaluate situations of road maintenance management by ROs/DEOs. I. Experts I. C/P infor and evaluate situations of road maintenance management by ROs/DEOs. I. C/P I. C/P view manuals on road maintenance management and construction supervisions. Project Manager Project Manager view manuals on road maintenance management and construction supervision. Road slope protection I. Other Counterpart personnel from vieloped and/or revised by the Phase-II and make their necessary revisions. Project Manager Project Coordinator information of C/Ps and Rogional Offices and Rogional Offices I. III, VII, VIII, VIII, XII, X, and XIII)</td><td>Induction Activities concerned DPWH staff. ement is developed. Activities activities Activities Activities Inputs Activities Inputs Inputs Activities Inputs Inputs Activities Inputs Inputs Activities Inputs Inputs Activities is consumed Inputs Inputs Inputs Inputs Inputs Inputs Inputs Inputs Internation Inputs Inputs</td><td>Induction of the staff. concerned DPWH staff. ement is developed. Activities Activities Inputs Activities Inputs fist conducting seminars/OJTs on road maintenance management by transformed of all ROs/DEOs. Japanese side fist conducting seminars/OJTs on road maintenance management by transformed of all ROs/DEOs. I. Experts fist conducting seminars/OJTs on road maintenance management by transformed engineers of all ROs/DEOs. I. Experts fist implementing pilot projects on road slope stability and relevant OJTs. I. Experts mitor and evaluate situations of road maintenance management by ROs/DEOs. Project Manager</td><td>to Druge inality and DPWH staff.</td></t<> | no Druge manutationation Activities Inputs Activities Inputs Inputs activities Inputs I. Participation of C/Ps and other concerned engineers of all ROs/DEOs. activities seminars/OITs on road maintenance management by ROS/DEOs. I. Experts I. CP activities is ensured. Project Manager Project Manager activities is ensured. Propertor Manager Project Manager activitie | no Drugge maintenance Activities concerned DPWH staff. Activities Activities Inputs Activities Inputs Inputs tainability Program for concerned engineers of all ROs/DEOs 1. Experts tainability Program for concerned engineers of all ROs/DEOs 1. CP intor and evaluate situations of road maintenance management view management and construction supervision Project Manager eloped and/or revised by the Phase-II and make their necessary revisions. Contant of Ros and | Inducting seminars/OTIs on road maintenance management by tailing seminars/OTIs on road maintenance management by the phase side Inputs concerned DPWH staff. Activities Activities Inputs Inputs Activities Activities Inputs Activities Inputs Inputs Activities Inputs Inputs Activities Inputs Inputs Activities Inputs Inputs ist implementing pilot projects on road slope stability and relevant OJTs. I. Experts infor and evaluate situations of road maintenance management by ROS/DEOs. I. Eacher/Bridge maintenance view manuals on road maintenance management by ROS/DEOs. Project Coordinanger view manuals on road maintenance management beloped and/or revised by the Phase-II and make their necessary revisions. Project Coordinanger - Bridge repair - Other Contrapat personnel from - Other Contrapat personnel from - Special bridge maintenance management by management staff - Other Contrapat personnel from - Statian for concerned engineers of all ROS/DEOs. - Bridge repair - Other Contrapat from - Statian for concerned engineers of all ROS/DEOs. - Special bridge repair (1) - Supporting saff | Inducting transmenter Activities concerned DPWH staff. Activities Activities Inputs concerned DPWH staff. Activities Activities Inputs Inputs Activities Activities Inputs Inputs Activities Activities Inputs Inputs ist conducting seminars/OJTs on road maintenance management by ist implementing pilot projects on road slope stability and relevant OJTs. Japanese side Philippine side ist implementing pilot projects on road slope stability and relevant OJTs. I. Experts I. C/P ist implementing pilot projects on road slope stability and relevant DJTs. I. Experts I. C/P infor and evaluate situations of road maintenance management by ROs/DEOs. I. Experts I. C/P infor and evaluate situations of road maintenance management by ROs/DEOs. I. C/P I. C/P view manuals on road maintenance management and construction supervisions. Project Manager Project Manager view manuals on road maintenance management and construction supervision. Road slope protection I. Other Counterpart personnel from vieloped and/or revised by the Phase-II and make their necessary revisions. Project Manager Project Coordinator information of C/Ps and Rogional Offices and Rogional Offices I. III, VII, VIII, VIII, XII, X, and XIII) | Induction Activities concerned DPWH staff. ement is developed. Activities activities Activities Activities Inputs Activities Inputs Inputs Activities Inputs Inputs Activities Inputs Inputs Activities Inputs Inputs Activities is consumed Inputs Inputs Inputs Inputs Inputs Inputs Inputs Inputs Internation Inputs Inputs | Induction of the staff. concerned DPWH staff. ement is developed. Activities Activities Inputs Activities Inputs fist conducting seminars/OJTs on road maintenance management by transformed of all ROs/DEOs. Japanese side fist conducting seminars/OJTs on road maintenance management by transformed of all ROs/DEOs. I. Experts fist conducting seminars/OJTs on road maintenance management by transformed engineers of all ROs/DEOs. I. Experts fist implementing pilot projects on road slope stability and relevant OJTs. I. Experts mitor and evaluate situations of road maintenance management by ROs/DEOs. Project Manager | to Druge inality and DPWH staff. |
| add for repairs (including periodic maintenance) is statted. Inputs Inputs Inputs Activities Activities Inputs Inputs Inputs Activities Activities Inputs Inputs Inputs Activities Activities Inputs Inputs Inputs Activities Inputs Inputs Inputs Inputs Activities Inputs Inputs Inputs Inputs Activities Inputs Inputs Inputs Intraview with concernent expression of CPs and other recomment of propertion of CPs and other recomment expression of the CPs and recomment expression of CPs and other recomment expression of the CPs and recomment expression of CPs and other recomment expression of CPs and other recomment expression of CPs and other recomment expression of the CPs and recomment expression of the CPs and recomment expression of the | och 41. Operation of attackers system on road stope stantity works and narrow with separity (including periodic maintanance) is samted. Inputs Inputs Activities Activities Inputs Inputs Inputs Activities Activities Inputs Inputs Inputs Activities Activities Inputs Inputs Inputs Activities Inputs Inputs Inputs Inputs austromates annagement by two concerned any transmement Inputs Inputs Inputs austromates management by two concerned any transmement Inputs Inputs Inputs austromates management by two concerned any transmement Inputs Inputs Inputs austromates management by two concerned any transmement Inputs Inputs Inputs austromates management and construction supervision Expand tope protection Other Councerned any transmement Proputs austromates management and maintenance management and maintenance management and maintenance management and maintenance management and and transmement Other Councerned any transmement Inputs ansistemates maintenance management and on transpreatent and maintenance managemen | col (4.1 Operation of diabates system on road stope stanty works and nerview with repairs (including periodic maintenance) is started. Ipputs Activities Inputs Inputs Activities Inputs areActivities Inputs < | cc 14.1 Operation of database system on road stope stability worts and unrup areas and unrup areas and unrup areas and unrup areas and interview with repairs (including periodic maintenance) is started. 1. Periodical area areas are and areas are and areas are areas are and areas area areas ar | cc 4.1 Operation of database system on road stope stabulty works and negative with repairs (including periodic maintenance) is started. Imputs Imputs Imputs Arthritis Arthritis Inputs Inputs Inputs Arthritis Imputs Inputs Inputs Arthritis Imputs Inputs Inputs Arthritis Imputs Inputs Inputs Arthritis Imputs Imputs Imputs ars/OTIS on road maintenance management by the phase-II and maintenance management by the phase-II and maintenance management and construction supervision. I. Experts I. Periot Contenance d by the phase-II and maintenance management and construction supervision. Project Continator Inputs I. Project Manager d maintenance management by the phase-II and make their necessary revision. Project Continator Inputs I. Project Manager d maintenance management and construction supervision. Project Continator Input s Input s d maintenance management by the phase-II and make their necessary revision. Project Continator Inputs d maintenance management by the phase-II and make their necessary Project contenance Project contenance d maintenance management of an oncorrection supress Project contenance Project contenance enconcreand engineers of all ROs/DEGs. | cc 4.1 Operation of database system on road stope stantaly worts and oncerned DPWH staff. activities in the view with concerned DPWH staff. cc Activities inputs inputs Activities activities in and interview with concerned DPWH staff. inputs Activities inputs inputs inputs ars/OTS on road stope stability and relevant OTS. inanigeneration indiverse interview with concerned engineers of all ROs/DEOs. a maintenance management by engleses on road stope stability and relevant OTS. indicerned croad management indicerned engineers of all ROs/DEOs. indicerned croad management indicerned engineers of all ROs/DEOs. a divite indicerned engineers of all ROs/DEOs. indicerned engineers of all ROs/DEOs. indicerned engineers of all ROs/DEOs. a markOTTS on bridge maintenance management indicerned engineers of all ROs/DEOs. indicerned engineers of all ROs/DEOs. indicerned engineers of all ROs/DEOs. a freq concerned engineers of all ROs/DEOs. i | cc 4.1 Operation of database system on road stope stability writs and oncerned by WH staff. cc repairs (including periodic maintenance) is started. system, and interview with system, and interview with system, and interview with system, and interview with concerned DPWH staff. Activities Activities Inputs Activities Inputs Inputs Actor Inputs Inputs | Concerned of the phase system on road stope stantity worts and under repairs (including periodic maintenance) is started. Imputs Inputs Activities Activities Inputs Inputs Interneore Project Manager Inputs Interneore Inputs Inputs <t< td=""><td>cc 4-1 Operation of database system on road stope stanuly worts and under view with repairs (including periodic maintenance) is started. system, and interview with staff. cc Activities Inputs is started. Activities Inputs is concerned DPWH staff. ars/OTS on road maintenance management by the road maintenance management by the Phase-II and make their necessary revisions. 1. Experts and by the Phase-II and make their necessary revisions. - Road stope stability and relevant OTS. - Road regineers of all ROs/DEOs. ars/OTS on bridge maintenance management by the Phase-II and make their necessary revisions. - Road regineers of all ROs/DEOs. - Road regineers of all ROs/DEOs. ars/OTS on bridge maintenance management by the Phase-II and make their necessary revisions. - Road regineers of all ROs/DEOs. - Road regineers of all ROs/DEOs. ars/OTS on bridge maintenance management by the Phase-II and make their necessary revisions. - Road regineers of all ROs/DEOs. - Road regineers of all ROs/DEOs. ars/OTS on bridge maintenance management by roncerion - Road regineers of all ROs/DEOs.<</td><td>cd for 4-1 Operation of database system on road slope statuly works and under the system, and interview with concerned DPWH staff. ce repairs (including periodic maintenance) is started. system, and interview with concerned DPWH staff. Activities Inputs Inputs Inputs Activities Inputs Inputs Inputs Activities Inputs Inputs Inputs Activities Inputs Inputs Inputs ars/OJTs on road maintenance management by Japanese side Philippine side I. Participation of C/Ps and other concerned engineers of all ROs/DEOs. or projects on road dispersability and relevan OJTs. I. Experts I. C/P I. C/P of projects on road maintenance management by the Phase-II and make their necessary revisions. Project Coordinator concerned from construction supervision d by the Phase-II and make their necessary revisions. Project coordinator Other Counterpart personnel from Construction supervision d by the Phase-II and make their necessary revisions. Bridge repair Other Counterpart personnel from Construction supervision d by the Phase-II and make their necessary revisions. Bridge repair Other Counterpart personnel from Corn of the counterpart personnel from Corn of CAR, II, IIII, VIII, VIII, XII, XII, XIII</td><td>acd for tepairs (including periodic maintenance) is started. 4-1 Operation of database system on road slope stability works and under system, and interview with concerned DPWH staff. activities Activities Inputs Inputs Activities Inputs Inputs Inputs Internance management by Ros/DEOs. Incancereden/Project Manager Inputs <td>zed for 4-1 Operation of database system on road stope stability works and onloge q-1 Propriority and interview with system, and interview with concerned DPWH staff. zee repairs (including periodic maintenance) is started. system, and interview with concerned DPWH staff. zee Activities Inputs Inputs Activities Inputs Inputs 1. Participation of C/Ps and other concerned on the concerned on the concerned on the concerned engineers of all ROs/DEOs. ars/OJTs on road stope stability and relevant OJTs. 1. Experts 1. C/P ot projects on road stope stability and relevant OJTs. 1. Experts 1. C/P utations of road maintenance management by ROs/DEOs. 1. Experts 1. C/P</td><td>zed for 4-1 Operation of database system on road slope stability works and pridge 4-1 Monutoring succes, usuates system, and interview with ce concerned DPWH staff.</td></td></t<> | cc 4-1 Operation of database system on road stope stanuly worts and under view with repairs (including periodic maintenance) is started. system, and interview with staff. cc Activities Inputs is started. Activities Inputs is concerned DPWH staff. ars/OTS on road maintenance management by the road maintenance management by the Phase-II and make their necessary revisions. 1. Experts and by the Phase-II and make their necessary revisions. - Road stope stability and relevant OTS. - Road regineers of all ROs/DEOs. ars/OTS on bridge maintenance management by the Phase-II and make their necessary revisions. - Road regineers of all ROs/DEOs. - Road regineers of all ROs/DEOs. ars/OTS on bridge maintenance management by the Phase-II and make their necessary revisions. - Road regineers of all ROs/DEOs. - Road regineers of all ROs/DEOs. ars/OTS on bridge maintenance management by the Phase-II and make their necessary revisions. - Road regineers of all ROs/DEOs. - Road regineers of all ROs/DEOs. ars/OTS on bridge maintenance management by roncerion - Road regineers of all ROs/DEOs.< | cd for 4-1 Operation of database system on road slope statuly works and under the system, and interview with concerned DPWH staff. ce repairs (including periodic maintenance) is started. system, and interview with concerned DPWH staff. Activities Inputs Inputs Inputs Activities Inputs Inputs Inputs Activities Inputs Inputs Inputs Activities Inputs Inputs Inputs ars/OJTs on road maintenance management by Japanese side Philippine side I. Participation of C/Ps and other concerned engineers of all ROs/DEOs. or projects on road dispersability and relevan OJTs. I. Experts I. C/P I. C/P of projects on road maintenance management by the Phase-II and make their necessary revisions. Project Coordinator concerned from construction supervision d by the Phase-II and make their necessary revisions. Project coordinator Other Counterpart personnel from Construction supervision d by the Phase-II and make their necessary revisions. Bridge repair Other Counterpart personnel from Construction supervision d by the Phase-II and make their necessary revisions. Bridge repair Other Counterpart personnel from Corn of the counterpart personnel from Corn of CAR, II, IIII, VIII, VIII, XII, XII, XIII | acd for tepairs (including periodic maintenance) is started. 4-1 Operation of database system on road slope stability works and under system, and interview with concerned DPWH staff. activities Activities Inputs Inputs Activities Inputs Inputs Inputs Internance management by Ros/DEOs. Incancereden/Project Manager Inputs <td>zed for 4-1 Operation of database system on road stope stability works and onloge q-1 Propriority and interview with system, and interview with concerned DPWH staff. zee repairs (including periodic maintenance) is started. system, and interview with concerned DPWH staff. zee Activities Inputs Inputs Activities Inputs Inputs 1. Participation of C/Ps and other concerned on the concerned on the concerned on the concerned engineers of all ROs/DEOs. ars/OJTs on road stope stability and relevant OJTs. 1. Experts 1. C/P ot projects on road stope stability and relevant OJTs. 1. Experts 1. C/P utations of road maintenance management by ROs/DEOs. 1. Experts 1. C/P</td> <td>zed for 4-1 Operation of database system on road slope stability works and pridge 4-1 Monutoring succes, usuates system, and interview with ce concerned DPWH staff.</td> | zed for 4-1 Operation of database system on road stope stability works and onloge q-1 Propriority and interview with system, and interview with concerned DPWH staff. zee repairs (including periodic maintenance) is started. system, and interview with concerned DPWH staff. zee Activities Inputs Inputs Activities Inputs Inputs 1. Participation of C/Ps and other concerned on the concerned on the concerned on the concerned engineers of all ROs/DEOs. ars/OJTs on road stope stability and relevant OJTs. 1. Experts 1. C/P ot projects on road stope stability and relevant OJTs. 1. Experts 1. C/P utations of road maintenance management by ROs/DEOs. 1. Experts 1. C/P | zed for 4-1 Operation of database system on road slope stability works and pridge 4-1 Monutoring succes, usuates system, and interview with ce concerned DPWH staff. |

Plan of Operation

: `` .

Annex 2

.

| Act | Activities | | - 10 | 31 4 | 41 9 | Yea Ia Ia | r-1 | AL . | | | | 1 2 | - 1 | 71.7 | Ye | u-2 | | 14.0 | | | | | | <u>Y</u> | ear-3 | | | | |
|----------|--|----------|---------|----------|----------|----------------|-------------|------------|---------------|----------|-----|---------------------------------------|--------------|------------|------------------------|----------|-----------|--------------------|----------|---------------|--------------------|---------------|--------------|----------------|--------------|--------------|----------|------------|----------|
| | | 11 | Ť | - | + | Ť | Ť | | | ÷Ψ | 4-4 | 1 - | - 3 | 41 3 | 1 0 | ÷Ť | 1 | 10 | 1111 | 2 | <u>1 2</u> | 31 | 4 | 510 | <u> 51 7</u> | | 9(10 | <u>111</u> | 112 |
| 0-1 | Inception Report (Work Plan) | E | | | Ĺ | | | | 1-1 | - | | | | 1 | | | 1- | \vdash | - | - | 1 | | | | | <u>+</u> ++ | | + | - |
| 0-2 | Joint Coordinating Committee | | A | <u> </u> | | | | | | | | | A | | | | | | | | | A | T | | 1 | P | 5 | 1 | T |
| 03 | Period working Group | | | | 1_ | | 4 | <u> </u> | | | | | | _ | | K | | | | | Δ | | | | | | <u> </u> | T | Γ |
| 0.5 | Monitoring of Project (Manitoring Sheet) | | | | 1 | | | | 171 | | | | | | -tt | <u> </u> | **** | | | | 1 | | | | | | | | _ |
| 0.5 | Project Fical Report (Draff) | H | | | | | | | 44 | | | | | <u></u> | | | | | | | _ | | ≜ - | | + | L-F | 1- | | |
| 0.7 | Project Final Report | | | | | | | | ╺┼╍╍┟╸ | | | | _ | | + | + | | | | | + | | | | | ┝─┝ | -4 | ÷ <u> </u> | |
| 1 0 | anability of concerned applaance of all POrt OFOs on road malatenance | \vdash | | | +- | ┥╍┼ | | | ╉ | ╈ | - | + | -+ | +- | +-+ | | + | $\left - \right $ | _ | | + | | | | ╉┯┥ | ┝─┾ | | | - |
| man | agement is enhanced. | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | |
| — | | | _[- | | | | | | | | | | | _ | + | | | | | | | | 4 | | 4 | | | | |
| 1-1 | Assist conducting seminars/OJTs on road maintenance management by Sustainability | | | - | | | , | ÷ | ÷÷ | in and | | | | | | | | | | | | | | | | | | | |
| | Program for concerned engineers of all RUS/UEOS. | | | | 1_ | | | _ | | | _ _ | | | | | | .L | | | | | | | | | \vdash | _ _ | \perp | |
| | A selection of the other selection of the second states of the second selection () (7) | | | | 1 | | 1 | 1 | | | | | | | | | ł | | | | 1 | | | | | | | 1 | |
| 1.2 | Assist implementing plot projects on road steps stability and relevant Collis, | | | 1 | 1 | | 1 | 1 | 1 1 | 1 | | 1 1 | ī | 1 | 1 1 | T | 1 | Π | - | Т | Π | 1 | 1 | 1 | | | | | |
| | | - | | | | † | | +- | ┿┯┿ | | | + | | + | + | + | | - | + | | + | -+ | ┉ | + | +- | | | | - |
| 1-3 | Monitor and evaluate situations of road maintenance management by ROs/DEOs. | | | | + | ÷ | ÷ | ÷ | يليسها | | - | | | مىلىم ر | م سم ة ت | ┉┾┉ | **** | | | | | | | , nagi yana | ليديني. ر | <u></u> | | | |
| <u> </u> | | | | _ | | ++ | | | | | | | | | +-+ | | | | | | - | \rightarrow | | _ _ | 4 | ┢╍╋ | | + | H |
| 1_4 | Review manuals on road maintenance management and construction supervision | | | | | | | | | <u> </u> | | | <u></u> | | | _ | 4_ | - | _ | | | | , i | <u> </u> | , | | | | |
| [``' | developed and/or revised by the Phase-II and make their necessary revisions. | | | | | | | | | _ | | | | _ | | | | | | | | _ | | | | \square | | | |
| 2. C | pability of concerned engineers of all ROs/ DEOs on bridge maintenance | T | T | T | | ΓŤ | | | | Ĩ | 1 | T | T | | T | | 1 | IT | ſ | | | | | | | | | | ł |
| man | acoment is enhanced. | | _ | + | + | ╆╍╋ | | | ╶┼╼╌┟╴ | - - | - | ┼╌┼ | | + | ┼╍┤ | | | \vdash | - - | | + | -+ | | + | ++ | -+- | | + | Н |
| 2-1 | Assist conducting seminars/OJTs on bridge maintonance management by Sustainability Research for experiment engineers of all ROs/DEOs | | | | + | ┿┥ | ÷ | | میکسیمان د | لسب | 1 | | ł | | | | | | | | | | | | | | - | | |
| | Sustainability Program for concerned engineers of all ROS/DEUS. | \vdash | | | | ┝╌┝ | - | | | | | ┝╌┝ | | + | ⊢ | | +- | \vdash | + | -{ | ┼╌┤ | | | + | +- | i-t- | | ⊢ | ⊢l |
| | Assist conduction seminarc//) ITs on hidden projection inspections by Sustainability | | | | | | | | | | | | | | | | | | | | | | | | | 11 | | | |
| 2.2 | Program for concerned engineers of all ROs/DEOs. | | | - | 1 | ī | 1 | I | 1 | 1 | | | | | | ļ | | | l | | | | | | | 1 | | 1 | |
| L | | | _ | | _ | \square | | | + | - - | | | | | ┨╌┥ | _ - | | | | | + | | | + | + | ; - | | + | -1 |
| | | | | | 1 | | | | | | | | | | | | | | | | | | | | . I | 1 | | | í I |
| 2.3 | Assist implementing pilot projects on bridge repair and relevant OJTs. | | | | | 1 | f | 1 | 1 1 | 1 | 1 | 1 1 | 1 | 1 | 1 1 | T) | Τ | Π | Т | Т | 17 | Ī | ł | 1 | ΪI | 11 | - I | | |
| [| | | | _ | ļ | ┥─┥ | | | ┼┉┼ | | - | | | | | | ┢ | | | | $\left - \right $ | ┉┥╸ | - - | + | | <u>-</u> †- | | - | - |
| ſ | the second explores all values of bodies maintenances and epotentian inspections by | | | | | | 1 | | | | | | | | | | 1 | | | | | | | | 4 | hand - | | | |
| 2-4 | Monkor and evaluate situations of energy mannenance and engineering inspections by | | | | | 1 | 1 | ł | 11 | 1 | | 1 | Ī | T | 11 | <u> </u> | 1 | | | | 1 | | 1 | | 11 | | | | |
| Į | ROUDEOS. | | | _ | <u> </u> | 4-4 | _ | | ┶╌┝ | | | | | | | | | | | | | | | | ┽┥ | j{ | | H | - |
| | | | | | | | | | | | | 11 | | | | | | | | | | | 1 | ĺ | | | | | i I |
| 2-5 | Review manuals on bridge mainlenance management and construction supervision | | | | | | | - <u>'</u> | · · · · | i | | شمستينان 1 1 | 1 | 1 | 1 1 | | 1 | | | - | Π | 1 | 1 | 1 | | | | | |
| | developed and/or revised by the Phase-II and make while necessary lovisions. | | | | 1 | | | | | | | | | _ | | | <u> </u> | | | | \square | | | + | + | ┢╼┼╸ | | + | |
| 3. C | apability of concerned engineers of ROs/ DEOs in target Regions (II, III, VII, VIII, | | | | | | | | 11 | | | | | | | | | | | | | | | | | | | | |
| and | XIII) on special bridge maintenance management is enhanced. | | | | | | | _ _ | ┿╋ | | | + | -+- | | + | | ┢ | | | - | 1-1 | | | | | | -[| 1 | |
| | | | | 1 | Ì | 1 + | | | . <u></u> | | | 4 | • • • | • • • • | | ٠ţ٠ | *** | {•••} | •†• | • • • • | 11 | ••• | 1 | 1 | | | | ļ | |
| 3-1 | Develop special bluge maintenance and management meneral | | _ | _ | | | | | | | | ╁╌┤ | | | | | | | | | | | | | | | | 1 | |
| I | Conduct cominars/OJTs on special bridge maintenance management for concerned | | | | | | | | | | | ورونيوني استينار | Щ. | | <u> </u> | - | | | - | <u> </u> | <u>i _</u> | | Ļ, | | <u>לרה</u> | | | | |
| 3-2 | engineers of larget ROs/DEOs. | | | | | 11 | | | | | | 140 | <u>n</u> | | 2040 | <u>"</u> | μ2 | | <u> </u> | - <u>2</u> 31 | 0.1 | 니 | _ <u>_</u> _ | <u></u> | 누 | ┝━┝- | | | |
| | anginaana atau atau atau atau atau atau atau | | | | | 11 | 1 | 1 | | | | | | -1 | | | 1 | | | | | | | | | 11 | | | |
| 3.3 | Assist conducting seminars/OJTs on special bridge inspections by Sustainability | | | - | Î | | ł | 1 | 11 | 1 | | | | | | | | | | | | ĺ | | | | | | 4_ | |
| | Program for concerned engineers of target ROS/D2OS (contact OS), for the target | | ╋ | ╞ | | | | | +- | | | 4 | | | -)1 | Ŧ | + | \Box | - | - | } | | | Í | | | | | |
| | Applied implementing pilot projects on special bridge regain and relevant OJTs. | 1 | | |] | 11 | 1 | | <u> </u> | | ir. | 2040 | er i | C | 374 0. | 1 | T | 50/ | | | | | | | | | | | |
| 13.4 | Assist http://www.pisteries.com | | | | | | | | 444 | 1 | ᅬᄔᇔ | Ē | <u> </u> | | 1-1 | | - | H | - | - | | H | -+- | 1 | 1-1 | | 1 | Г | |
| | | | | L | + | + | <u> </u> | | 11 | | | | ÷ | | <u> </u> | ~+ | + | \vdash | | + | | | | 1 | 1 | { 1 | | 1 | |
| 3-5 | Monitor and evaluate situations of special bridge inspections by ROMDICOS. | | 1 | 1 | | | | | | _ | | | | | | | | | | | | \vdash | | | | ┟╌╌┨╸ | | ┢ | |
| | the provide the section of the secti | | T | | Т | | | 1 | | | | | | <u> </u> | | ┿ | + | ┝━┥ | ╺╍┝╍ | | <u> </u> | | <u> </u> | ÷ | 4 | | ļ | | 1 |
| 3-6 | 3-6 Review special bridge inspection manuals developed by the Phase-h and stake their | | | | 1 | | | 1 | τī | 1 | 1 | 11 | | | | | | | | _ | _ | | | | | | | 4 | |
| L | necessary revisions. | 1- | | | | | 1 | - | | | | | | Γ | | | | | | | 1 | | | | | | 1 | | |
| 4. D | atabase system to be utilized for road and bridge maintenance management is | | | | | | | | | | | | | | | | | | | | | | | ł | | | | | |
| dev | alaped. | | | | | | | | | -+ | - | | | | | | + | | | -1 | | | 1 | 1 | T | \square | | | |
| | Review current filing situation of documents/data related to road and bridge | | | - | | | | Ì | | | | | | | | | | | Į | | | | | | | | | | |
| 4=1 | maintenance management and identify issues to be improved. | | | | | | | | | | | | | - - | 1- | | 1 | 1-1 | - | | | П | Т | | Τ- | | | | |
| | Prepare the basic plan (framework, necessary entry data, operation manner, selection | | - | | - | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-2 | of model RO, etc.) for developing the database system. | | | | | | | + | -┼┈╾┼ | | | | | | | | +- | + | - | | 1 | | | 7 | Т | | Т | | |
| | is the second second and the basic clan. | | | | | - | | | | , , | | ي بيند | | | | 1 | | ļ | | | | | | | | | 1- | | |
| 4-3 | implement developing the entropics system outsid on the same pro- | | | - - | | | | ╉ | | | - | 1 | | | | | - | 1 | - | | Τ | | 1 | 7 | | | | | |
| 5.1 | E-iss exercise of the and make loal operations of the system al model RO. | | | ł | | | 11 | | | 1 | | i i i i i i i i i i i i i i i i i i i | ا ا | 1 | 1 | | | | | | | | | | | \vdash | | | _ |
| 9+4 | Enter necessary only and make may personal and an | \vdash | | ┿ | | | i-t | | | | | | | - | 1 | | |] | | | | | | | | | | | |
| 4 - | Improve the system in consideration of the results of trial operations at model RO. | | | ĺ | l | | | | | | | | ľ | i | 1 | | 1 | | | | _ | 1 | | | | ┟╌┼ | <u></u> | | - |
| <u> </u> | manare are specific and second s | | ŀ | | + | +-+ | t-ŀ | | | -1- | -1- | 1 | | ~~~ | T | T | T | | T | | 1 | | | ┙ | | | | | |
| 4.6 | Prepare relevant manuals including operation manner. | | | | | 1 | | | | | | | | | | | _ | | | | | 1-1 | | | _ | <u> </u> | | -+- | |
| | | - | + | + | + | - | † -† | - | + | | 1 | | | | Τ | Т | | 11 | | ł | | | | Ē | eador | 310.57 | ור | | 1 |
| 4-7 | Conduct seminars on the database system and its relevant manuals. | 1 | | _]. | | | | | | _ | | | <u> _</u> . | 4 | | _⊦ | | | ┝┯┝ | | | \vdash | 1 | - T | Ŧ | TT | | | T |
| 1 | m - 10 | Г | | | T | 2 | | Τ | | | 1 | 1 | | 5 | 2 | | 1 | | ×4 · | 1 | - | | - | | <u>_</u> | ╬╌╢ | | Ļ | <u></u> |
| L | Training in Japan/Third Country: Japan Treining 1.2 Third Country Training | + | | 3 | 4 | 5 0 | 7 | 8 | 9 10 | 11 | 12 | 1 2 | 3 | 4 | 5 6 | 7 | 8 | 10 | 11 | 12 | 1 2 | 13 | 4 | 51 | <u>GJ 7</u> | 1 81 | 9110 | | 12 |
| | | <u> </u> | <u></u> | - | · 6 | | | | | | | | | | | | | | | | | | | | | | | | |

NE

N Ν

Annex 3

• 、 , ۰.

Project Organization Chart



Ъ

Ŕ

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 cbserver.
- 2) Persons who are invited by the Chairperson may attend the meeting as observers.