# Annex 5 Monitoring Sheet

# Project Monitoring Sheet I (Revision of Project Design Matrix)

Version 1

Dated July 2015

**Project Title:** The Project for Strengthening Capacity for Maintenance of Roads and Bridges
**Implementation Agency:** Road Infrastructure Department of Ministry of Public Work and Transport (RID MPWT)
**Target Groups:** Engineers of RID
**Period of Project:** April 2015 – March 2018
**Project Site:** Cambodia
**Target Area:** Roads and Bridges under MPWT

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| **Overall Goal**<br>Appropriate maintenance of roads and bridges is managed by MPWT. | 1. The road and bridge database is updated once / a year.<br>2. Road and bridge maintenance plans are updated once / a year base on the result of the road and bridge database updated.<br>3. Road and bridge maintenance is carried out based on the road and bridge maintenance plan and the maintenance and repair manuals, under supervision of RID.<br>4. The road maintenance and repair manuals, and the bridge maintenance and repair manuals are regularly reviewed. | 1. Log record of the database, random sample check of individual data<br>2. The maintenance plans, corresponding data from the database<br>3. The maintenance record, the maintenance plans and manuals<br>4. Minutes of the review meeting | - Country's socio-political situation does not change rapidly. | | |
| **Project Purpose**<br>Capacity of RID to supervise implementing bodies maintaining roads and bridges is enhanced. | 1. Inspection results done by the three target DPWTs are approved by RID based on the manuals by the end of the Project.<br>2. Repair results done by the two target DPWTs are approved by RID base on the manuals by the end of the Project.<br>3. The above two target DPWTs prepare | 1. DPWT inspection reports and on-site confirmation by RID<br>2. DPWT repair reports and on-site confirmation by RID.<br>3. The said draft budget and its submission date | - Organizational arrangement of MPWT is not changed drastically. | | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
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| | a draft budget for roads and bridge maintenance for FY 2018 respectively within pre-agreed schedule.<br>4. Road and bridge maintenance cycle is explained and shared to concerning offices and units at the project wrap-up seminar.<br>5. Maintenance budget of road and bridge is prepared by RID according to the road and bridge maintenance cycle | 4. Number and name of the participated offices and unit<br>5. Interest level of the participants through the questionnaire. | | | |
| **Outputs**<br>1. The bridge maintenance cycle is established. | 1-1. The annual action plan for bridge maintenance cycle is developed by June every year for each targeted DPWT.<br>1-2. The above action plan is approved by August every year.<br>1-3. At least 5 officials of RID engineers pass exam of bridge maintenance cycle.<br>1-4. The annual bridge maintenance budget is drafted at the target DPWTs of 2nd year and 3rd year by May every year. | 1-1. The annual action plan and it's date developed<br>1-2. The approved date<br>1-3. The exam results and participants list<br>1-4. The drafted budget and its date | - The trained staff/officers remain at the job.<br>- Roles of DPWTs and other concerning offices and units are not changed including budget preparation system. | | |
| 2. Road and bridge inspection capacity of RID is enhanced. | 2-1. The road and bridge maintenance manuals are drafted by August 2015 and finalized by June 2017.<br>2-2. The selected roads and bridges in the targeted DPWTs are inspected according to the maintenance manual.<br>2-3. The inspection results are registered to the road and bridge database by RID until November every year.<br>2-4. At least 5 officials of RID's | 2-1. The manuals and its' date prepared<br>2-2. Inspection record and sample on-site confirmation<br>2-3. Inspection record and corresponding data for sample check<br>2-4. The test results and participants list | | | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
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| | engineers pass road and bridge inspection test. | | | | |
| 3. Road and bridge repair capacity of RID is enhanced. | 3-1. The road and bridge repair manuals are drafted by January 2016 and finalized by June 2017.<br>3-2. The identified roads and bridges in the targeted DPWTs are repaired according to the repair manuals and the inspection results.<br>3-3. The repair results are registered to the road and bridge database by RID within 1 month after the completion of repair works.<br>3-4. At least 5 officials of RID's engineers pass road and bridge repair test. | 3-1. The manuals and its' date prepared<br>3-2. Repair record and sample on-site confirmation<br>3-3. Repair record and corresponding data for sample check<br>3-4. The test results and participants list | | | |
| 4. Road and bridge maintenance cycle is introduced to other DPWTs and concerning agencies. | 4-1. Bridge inspection is carried out at the more than 80% DPWTs (20/25 DPWTs).<br>4-2. More than 80% DPWTs attends the seminar held in the Project.<br>4-3. The project activities are disseminated to other agencies concerning road/bridge maintenance. (number is not specified but with increments through the project) | 4-1. Bridge inventory data<br>4-2. The participants list<br>4-3. Publicity matter | | | |

| **Activities** | **Inputs** | | |
|---|---|---|---|
| 1-1. To review the present bridge maintenance cycle and the works of RID in comparison to the existing Japanese system<br>1-2. To propose annual action plan for bridge maintenance cycle to establish a proper bridge maintenance cycle based on the review results<br>1-3. To practice the action plan<br>1-4. To hold workshop of the bridge maintenance cycle<br>1-5. To prepare draft annual bridge maintenance budget<br><br>2-1. To review and develop road maintenance manual<br>2-2. To review and develop bridge maintenance manual, including a database frame<br>2-3. To hold training workshops on road and bridge inspections<br>2-4. To inspect roads and bridges and prepare rough cost estimation of the repair works at the target DPWTs<br>2-5. To register the inspection results in the database at the target DPWTs<br>2-6. To revise the road and bridge maintenance manuals incorporating lessons learned from the above activities by organizing review workshops<br><br>3-1. To review and establish road repair manual<br>3-2. To review and establish bridge repair manual<br>3-3. To hold training workshops on road and bridge repairs<br>3-4. To identify roads and bridges for the pilot repair works based on the inspection results at the target DPWTs<br>3-5. To establish repair plan for the identified roads and bridges at the target DPWTs<br>3-6. To repair the identified roads and bridges at the target DPWTs<br>3-7. To evaluate the above repair works<br>3-8. To revise the road and bridge repair manual incorporating lessons learned from the above activities by organizing review workshop by organizing review workshop<br><br>4-1. To organize seminars for other DPWTs – trainings on road | (Japan side)<br>1. A chief advisor / A long term expert<br><br>2. Short term experts<br>1) Team Leader / Bridge Maintenance Engineer<br>2) Deputy-team leader / Road Maintenance Planner<br>3) Bridge Inspection Engineer<br>4) Bridge Repair Engineer (1) (Planning and Design)<br>5) Bridge Repair Engineer (2) (Repairing work Expert)<br>6) Bridge Maintenance Planner<br>7) Road Maintenance Engineer(1)<br>8) Road Maintenance Engineer(2)<br>9) Coordinator / Assistant for Road and Bridge Inspection<br>10) Coordinator for other relevant project / C/P training Supervision<br><br>3. Equipment for road and bridge maintenance<br><br>4. C/P training<br><br>5. Cost for seminars and Trainings as the project activities | (Cambodia side)<br>1. Arrangement of counterpart personnel<br>1) Project Director<br>2) Project Manager<br>3) Other Necessary Personnel<br><br>2. Implementation cost for the pilot repair works<br><br>3. Travel expenses and allowances for the participants of the seminars and trainings organized as the project activities<br><br>4. Maintenance cost of the JICA project equipment<br><br>5. Office space including its utility cost (electricity, water, internet and other necessary office facilities)<br><br>6. Etc. | - Conditions of roads and bridges under MPWT are not rapidly deteriorated.<br>- Flood with large scale is not occurred annually.<br><br>Pre-condition<br>N/A |

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| and bridge inspection<br>4-2. To organize seminars for other DPWTs – trainings on road and bridge repair<br>4-3. To organize the project wrap-up seminar | | | |

Project Monitoring Sheet I (Revision of Plan of Operation)

Ver. 1

Dated: July, 2015

Project Title: The Project for Strengthening Capacity for Maintenance of Roads and Bridges

| INPUTS | Expert in charge | Plan/ Actual | 2015 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2016 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2017 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2018 1 | 2 | 3 | Remarks | Monitoring Issue | Monitoring Solution |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Expert** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chief Advisor | OGAWA Koichi | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Team Leader / Bridge Maintenance Engineer | MIZOTA Yuzo | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Deputy Team Leader / Road Maintenance Planner | NAKAJIMA Takashi | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bridge Repair Engineer (1) (Plannning and Design) | TOKUMASU Ken | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bridge Repair Engineer (2) (Repairing Work Expert) | **** | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bridge Inspection Engineer | TSUKAMOTO Shigeaki | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bridge Maintenance Planner | WATANABE Masatoshi | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Road Maintenance Engineer (1) | **** | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Road Maintenance Engineer (2) | **** | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coordinator / Assistant for Road and Bridge Inspection | OHTAKE Hiroaki | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coordinator for other Relevant Project | YUMITA Kazuo | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Equipment** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Equipment for Pilot Project | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Training in Japan** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | ACTIVITIES | Expert in charge | Plan/ Actual | 2015 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2016 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2017 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2018 1 | 2 | 3 | Responsible Organization: Japan | Cambodia | Achievements | Issue & Countermeasures |
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| Output-1: The bridge maintenance cycle is established. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-1 | To review the present bridge maintenance cycle and the works of RID in comparison to the existing Japanese system | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-1-1 | To collect existing Data and analyze them with RID | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-1-2 | To study the cases of Japanese bridge maintenance cycle that be able to apply to Cambodia | Mizota / Tokumasu / Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-1-3 | To review the result and discuss with RID | Ogawa / Tokumasu / Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-2 | To propose annual action plan for bridge maintenance cycle to establish a proper bridge maintenance cycle based on the review results | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-2-1 | To draft the action plan with RID | Mizota / Nakajima/ Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-2-2 | To supervise "1.2.1 activities" and review with RID for final action plan | Ogawa / Mizota / Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-3 | To practice the action plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-3-1 | To supervise the action of RID and the other organization | Mizota / Nakajima / Tokumasu / Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-3-2 | To supervise "1.3.1 activities" and evaluate it with RID | Ogawa /Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-4 | To hold workshops of the bridge maintenance cycle | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-4-1 | To prepare workshops and materials for the workshops and explain their part at workshops with RID | Nakajima / Tokumasu / Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-4-2 | To organize the workshops and review the result with RID | Ogawa / Mizota / Nakajima / Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-5 | To prepare draft annual bridge maintenance budget | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-5-1 | To draft the maintenance budget of target DPWT | Mizota / Nakajima / Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-5-2 | To draft the maintenance budget with RID | Mizota / Nakajima / Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-5-3 | To supervise "1.5.2 activities" and review drafts with RID | Ogawa | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | ACTIVITIES | Expert in charge | Plan/ Actual | 2015 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2016 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2017 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2018 1 | 2 | 3 | Responsible Organization Japan | Cambodia | Achievements | Issue & Countermeasures |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Output-2: Road and bridge inspection capacity of RID is enhanced. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-1 | To review and develop road maintenance manual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-1-1 | To review road maintenance manual with RID | Nakajima / Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-1-2 | To draft new road maintenance manual with RID | Nakajima / Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-1-3 | To supervise "2.1.1-2 activities" and review it with RID | Ogawa / Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-2 | To review and develop bridge maintenance manual, including a database framework | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-2-1 | To draft new bridge maintenance manual with RID | Tokumasu / Tsukamoto / Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (1) | Inspection Manual | Tokumasu / Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (2) | Database Manual | Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-2-2 | To supervise "2.2.1 activities" and review it with RID for finalizing bridge maintenance manual | Ogawa / Tokumasu / Tsukamoto / Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-3 | To hold training workshops on road and bridge inspections | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-3-1 | To prepare workshops and materials for the workshops and explain their part at workshops with RID | Tokumasu / Tsukamoto / Ohtake / Watanabe | Plan | | | As Needed | | | | | | | | | | | | As Needed | | | | | | | | | | | | As Needed | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-3-2 | To organize the workshops and review the result with RID | Ogawa / Tokumasu / Tsukamoto / Ohtake | Plan | | | As Needed | | | | | | | | | | | | As Needed | | | | | | | | | | | | As Needed | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4 | To inspect roads and bridges and prepare rough cost estimation of the repair works at the target DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4-1 | To prepare draft inspection plan for roads and bridges with RID | Nakajima/Tokumasu/ Tsukamoto/Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4-2 | To implement road and bridge inspection with RID and DPWTs engineers at the target DPWTs | Tokumasu /Tsukamoto / Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4-3 | To prepare rough cost estimation of the repair works for roads and bridges with RID | Tokumasu / Tsukamoto / Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4-4 | To supervise "2.4.1-3 activities" and discuss with RID | Ogawa / Mizota /Tokumasu / Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0 | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0 | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-5 | To register the inspection results in the database at the targeted DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-5-1 | To register the inspection results of roads with RID | Nakajima / Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-5-2 | To register the inspection results of bridges with RID | Tokumasu / Tsukamoto / Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-5-3 | To supervise "2.5.1-2 activities" and review the result with RID | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-6 | To register the inspection results in the database at the targeted DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-6-1 | To revise the road and bridge maintenance manual with RID | Mizota/Nakajima/ Tokumasu/Tsukamot | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-6-2 | To prepare workshops and materials for the workshops and explain their part at workshops with RID | Mizota / Nakajima / Tokumasu / Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-6-3 | To organize the workshops and review the result with RID | Ogawa / Mizota / Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | ACTIVITIES | Expert in charge | Plan/ Actual | 2015 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2016 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2017 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2018 1 | 2 | 3 | Responsible Organization Japan | Cambodia | Achievements | Issue & Countermeasures |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Output-3. Road and bridge repair capacity of RID is enhanced. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-1 | To review and establish road repair manual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-1-1 | To review road repair manual with RID | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-1-2 | To draft new road repair manual with RID | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-1-3 | To supervise "3.1.1-2 activities" and review the result with RID for finalize repair manual | Ogawa / Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-2 | To review and establish bridge repair manual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-2-1 | To review bridge repair manual with RID | Mizota / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-2-2 | To draft new bridge repair manual with RID | Mizota / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-2-3 | To supervise "3.2.1-2 activities" and review the result with RID for finalize repair manual | Ogawa / Mizota / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-3 | To hold training workshops on road and bridge repairs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-3-1 | To prepare workshops and materials for the workshops and explain their part at workshops with RID | Tokumasu | Plan | | | | | | | As Needed | | | | | | | | | | | | As Needed | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-3-2 | To organize the workshops and review the result with RID | Ogawa / Mizota / Tokumasu | Plan | | | | | | | As Needed | | | | | | | | | | | | As Needed | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0 | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-4 | To identify roads and bridges for the pilot repair works based on the inspection results at the target DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-4-1 | To prepare priority sites list of roads for the pilot repair works with RID | Mizota / Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-4-2 | To prepare priority sites list of bridges for the pilot repair works with RID | Mizota / Nakajima / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-4-3 | To identify roads and bridges for the pilot repair works with RID | Ogawa | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-5 | To establish repair plan for the identified roads and bridges at the target DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-5-1 | To draft repair plan for roads with RID | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-5-2 | To draft repair plan for bridges with RID | Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-5-3 | To review and finalize repair plan for the identified roads and bridges with RID | Ogawa /Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-6 | To repair the identified roads and bridges at the target DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-6-1 | To repair the identified roads with RID and DPWTs engineers at the target DPWTs | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-6-2 | To repair the identified bridges with RID and DPWTs engineers at the target DPWTs | Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-6-3 | To supervise "3.6.1-2 activities" and discuss with RID | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | ACTIVITIES | Expert in charge | Plan/ Actual | 2015 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2016 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2017 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2018 1 | 2 | 3 | Responsible Organization Japan | Cambodia | Achievements | Issue & Countermeasures |
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| 3-7 | To evaluate the above repair works | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-7-1 | To prepare evaluation report of the roads repair works with RID | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-7-2 | To prepare evaluation report of the bridges repair works with RID | Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-7-3 | To supervise "3.7.1-2 activities" and review the result with RID | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-8 | To revise the road and bridge repair manual incorporating lessons learned from the above activities by organizing review workshop by organizing review workshop | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-8-1 | To draft revise version of road repair manual with RID | Mizota / Nakajima / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-8-2 | To draft revise version of bridge repair manual with RID | Mizota / Nakajima / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-8-3 | To supervise "3.8.1-2 activities" and review the result with RID for finalize revised repair manual | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Output-4. Road and bridge maintenance cycle is introduced to other DPWTs and concerning agencies. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-1 | To organize seminars for other DPWTs – trainings on road and bridge inspection | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-1-1 | To prepare seminars and materials for the seminars and explain their part at workshops with RID | Mizota / Nakajima / Yumita | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-1-2 | To organize the seminars and review the result with RID | Ogawa / Mizota / Yumita | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0 | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-2 | To organize seminars for other DPWTs – trainings on road and bridge Repair | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-2-1 | To prepare seminars and materials for the seminars and explain their part at workshops with RID | Mizota / Nakajima / Yumita | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-2-2 | To organize the seminars and review the result with RID | Ogawa/Mizota/ Nakajima/Yumita | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0 | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-3 | To organize the project wrap-up seminar for other DPWTs by RID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-3-1 | To organize the project wrap-up seminar for other DPWTs | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Monitoring Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kick-off Meeting | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Kick-off Meeting | | Plan | | ▲ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | ▲22 May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Joint Coordinating Committee | | Plan | | | | ▲ | | | | | | ▲ | | | | | | ▲ | | | | | | ▲ | | | | | | ▲ | | | | | | ▲ | | | | | |
| | | | Actual | | | | ▲10 July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Revision of PDM from Version zero to one. | | Plan | | ▲ | | | | | | | | | | ▲ | | | | | | | | | | ▲ | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Submission of Monitoring Sheet | | Plan | | | | ▲ | | | | | ▲ | | | | | | ▲ | | | | | ▲ | | | | | | ▲ | | | | | | ▲ | | | | | |
| | | | Actual | | | | ▲10 July | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Reports/Documents | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Final Report | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ▲ | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Evaluation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Terminal Evaluation | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ▲ | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

## TO CR of JICA CAMBODIA OFFICE

### PROJECT MONITORING SHEET

**Project Title : The Project for Strengthening Capacity for Maintenance of Roads and Bridges**

**Version of the Sheet: Ver.2 (January 2016)**

**Name: Yuzo MIZOTA**
**Title: Team Leader**

**Submission Date: 21 January 2016**

## I. Summary

### 1 Progress

**1-1 Progress of Inputs**

**[(Japan side) 2. Short term experts]**

**Addition of Road Maintenance Engineer (3) (Overloading Control)**

**1-2 Progress of Activities**

**Progress of activities is indicated in Monitoring Sheet Form 3-2 and Form 3-3.**

**1-3 Achievement of Output**

**[Output-1: The bridge maintenance cycle is established.]**

- **Inspection of all bridges in Cambodia has been completed by December 2015.**
- **The basic maintenance works procedure has been specified in the Bridge Maintenance Manual.**
- **The draft manual of bridge maintenance is completed.**
- **Trial of action plan for bridge maintenance cycle is ongoing.**
- **Outlines of the proposed annual action plan were agreed with MPWT in the 1st JCC meeting on July 10, 2015.**
- **JICA expert team carried out a joint inspection of all bridges in the country in collaboration with MPWT and DPWT.**
- **Based on the inspection result, priority list of bridges with serious damage and the damage diagnosis records of each bridge was formulated.**

**[Output-2: Road and bridge inspection capacity of RID is enhanced.]**

**[Road]**

- **Update scheme (revision or additional preparation) of the existing manual has been determined, based on the review on the existing manual.**
- **Road maintenance guideline (ver.1) was prepared in August, 2015.**
- **In addition to the road maintenance guideline, a guideline for DRIMS operation was prepared in August, 2015. The guideline supported inspection capacity improvement of RID officials.**
- **Inspection (IRI measurement and visual inspection) of target 1-digit roads was completed in August, 2015.**
- **The analysis on the inspection results was fed back to update of the guideline (ver.1) to the version-2.**
- **Approximate maintenance planning and cost estimate of 1-digit roads were carried out following the prepared road maintenance guideline.**
- **Road inventory format has been invented in accordance with the prepared road maintenance guideline.**
- **Road inventories of 1-digit roads have been prepared.**
- **Mr. You Dara (RID) gave a presentation on the established routine road maintenance cycle in the workshop held on 7 August, 2015, and RID officials understood the new road maintenance system.**
- **Mr. Chan Dara (RID) gave a presentation on road inspection and analysis results in the workshop held on November, 2015, and RID and DPWT officials deepened the practical knowledge on the new inspection and analysis procedure.**
- **2 of officials are able to conduct DRIMS.**

**[Bridge]**

- **The Bridge Maintenance Manual was drafted together with RID officials in August 2015.**
- **The training plan of bridge maintenance was drafted in December 2015.**
- **All bridges (2226 bridges) under all DPWTs were finished to inspect.**
- **Database was created and installed in RID director office.**
- **Mr. NIN Menakak and Mr. SA Sivutha (RID) gave a presentation on the established routine bridge maintenance cycle in the workshop held on August 7, 2015, and RID officials understood the new road maintenance system.**
- **Mr. NIN Menakak (RID) gave a presentation on bridge inspection and analysis results in the workshop held on September 17, 2015, and RID and DPWT**

**officials deepened the practical knowledge on the new inspection and analysis procedure.**

**[Output-3: Road and bridge repair capacity of RID is enhanced.]**

**[Road]**

- **Update scheme (revision or additional preparation) of the existing manual has been determined, based on the review on the existing manual.**
- **Revision of the road repair guideline was started and in progress. (target to complete early March)**
- **Road condition (surface condition) was surveyed.**

**[Bridge]**

- **The contents to be included in the manual were agreed and draft was started to prepare. (target to complete early March)**
- **Through 2000-bridge inspection, damaged bridges were identified.**
- **4 bridges from Kandal DPWT and 2 bridges from Phnom Penh DPWT were chosen for pilot project.**

**[Output-4: Road and bridge maintenance cycle is introduced to other DPWTs and concerning agencies.]**

- **Bridge inspection of all DPWTs was conducted.**
- **Kickoff Seminar held on 22 May, 2015 (5 DPWTs)**
- **Five (5) workshops**
  - **1st: Road Maintenance Cycle using IRI (Aug 8, 2015)**
  - **2nd :Bridge Maintenance Cycle and 2000 Bridges Inspection (Sep 17, 2015)**
  - **3rd: Introduction of database system (Oct 22, 2015)**
  - **4th: 2000 Bridge Inspection and Overloading Control (Oct 27, 2015)**
  - **5th: Overloading Control, Report of training in Japan (Dec 11, 2015)**

**1-4 Achievement of the Project Purpose**

**[Road]**

- **All 1st digit roads (not limited to the target DPWTs) were inspected using DRIMS based on the manual.**
- **Clarification of 49 codes to be implemented for road repair work by DPWT. Revision of repair guideline to include all the works is ongoing.**
- **Manual revision (include all work code items into new manual) (in progress)**

**[Bridge]**

- **Completion of preparation of database and proposition of framework for**

**standard work code items (to be included in budget request)**

- **Proposal of Training Plan, Bridge Maintenance Expert (ME) Program**
- **Manual creation (framework and selection of priority repair item)**

**[Road/Bridge]**

- **It was decided to formulate a repair manual to clarify more in detail of method statement of the work (Job sheet style) and selected working team is drafting the manual.**
- **Holding workshops, inviting RID and DPWTs**

**1-5 Changes of Risks and Actions for Mitigation**

**N/A**

**1-6 Progress of Actions undertaken by JICA**

**Kickoff seminar was held on 22nd May, 2015.**
**1st JCC meeting was held on 10th July, 2015.**
**2nd JCC meeting was held on 18th January, 2016.**
**Five (5) workshops were held as follows;**

- **1st: Road Maintenance Cycle using IRI (Aug 8, 2015)**
- **2nd :Bridge Maintenance Cycle and 2000 Bridges Inspection (Sep 17, 2015)**
- **3rd: Introduction of database system (Oct 22, 2015)**
- **4th: 2000 Bridge Inspection and Overloading Control (Oct 27, 2015)**
- **5th: Overloading Control, Report of training in Japan (Dec 11, 2015)**

**1-7 Progress of Actions undertaken by Gov. of Cambodia**

**Kickoff seminar was held on 22nd May, 2015.**
**1st JCC meeting was held on 10th July, 2015.**
**2nd JCC meeting was held on 18th January, 2016.**
**Five (5) workshops were held as follows;**

- **1st: Road Maintenance Cycle using IRI (Aug 8, 2015)**
- **2nd :Bridge Maintenance Cycle and 2000 Bridges Inspection (Sep 17, 2015)**
- **3rd: Introduction of database system (Oct 22, 2015)**
- **4th: 2000 Bridge Inspection and Overloading Control (Oct 27, 2015)**
- **5th: Overloading Control, Report of training in Japan (Dec 11, 2015)**

**1-8 Progress of Environmental and Social Considerations (if applicable)**

**N/A**

**1-9 Progress of Considerations on Gender/Peace Building/Poverty Reduction (if applicable)**

**N/A**

**1-10 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)**

**Transfer of management responsibility of national road No.4 (RN4) from private sector to Cambodian Government as of January 14, 2016**

## 2 Delay of Work Schedule and/or Problems (if any)

**2-1 Detail**

**N/A**

**2-2 Cause**

**N/A**

**2-3 Action to be taken**

**N/A**

**2-4 Roles of Responsible Persons/Organization (JICA, Gov. of Cambodia,etc.)**

**N/A**

## 3 Modification of the Project Implementation Plan

**3-1 PO**

**PO of the project is prepared. It is attached as Monitoring Sheet Form 3-3.**

**3-2 Other modifications on detailed implementation plan**

***(Remarks: The amendment of R/D and PDM (title of the project, duration, project site(s), target group(s), implementation structure, overall goal, project purpose, outputs, activities, and input) should be authorized by JICA HDQs. If the project team deems it necessary to modify any part of R/D and PDM, the team may propose the draft.)***

**PDM revised from Ver.1 to Ver.2 is attached as Monitoring Sheet Form 3-2.**

**PM Form 3-2 (1) Monitoring Sheet I (PDM Ver.1)**

**PM Form 3-2 (2) Monitoring Sheet I (PDM Ver.2)**

**PM Form 3-2 (3) Monitoring Sheet I (Detail of Modification)**

| | |
|---|---|
| 4 | **Preparation of Gov. of Cambodia toward after completion of the Project**<br>**N/A** |

**II. Project Monitoring Sheet I & II** *as Attached*

# Project Monitoring Sheet I (Revision of Project Design Matrix)

Version 1

Dated July 2015

**Project Title:** The Project for Strengthening Capacity for Maintenance of Roads and Bridges
**Implementation Agency:** Road Infrastructure Department of Ministry of Public Work and Transport (RID MPWT)
**Target Groups:** Engineers of RID
**Period of Project:** April 2015 – March 2018
**Project Site:** Cambodia
**Target Area:** Roads and Bridges under MPWT

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| **Overall Goal**<br>Appropriate maintenance of roads and bridges is managed by MPWT. | 1. The road and bridge database is updated once / a year.<br>2. Road and bridge maintenance plans are updated once / a year base on the result of the road and bridge database updated.<br>3. Road and bridge maintenance is carried out based on the road and bridge maintenance plan and the maintenance and repair manuals, under supervision of RID.<br>4. The road maintenance and repair manuals, and the bridge maintenance and repair manuals are regularly reviewed. | 1. Log record of the database, random sample check of individual data<br>2. The maintenance plans, corresponding data from the database<br>3. The maintenance record, the maintenance plans and manuals<br>4. Minutes of the review meeting | - Country's socio-political situation does not change rapidly. | | |
| **Project Purpose**<br>Capacity of RID to supervise implementing bodies maintaining roads and bridges is enhanced. | 1. Inspection results done by the three target DPWTs are approved by RID based on the manuals by the end of the Project.<br>2. Repair results done by the two target DPWTs are approved by RID base on the manuals by the end of the Project.<br>3. The above two target DPWTs prepare a draft budget for roads and bridge maintenance for FY 2018 respectively | 1. DPWT inspection reports and on-site confirmation by RID<br>2. DPWT repair reports and on-site confirmation by RID.<br>3. The said draft budget and its submission date<br>4. Number and name of the participated offices and | - Organizational arrangement of MPWT is not changed drastically. | | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| | within pre-agreed schedule.<br>4. Road and bridge maintenance cycle is explained and shared to concerning offices and units at the project wrap-up seminar.<br>5. Maintenance budget of road and bridge is prepared by RID according to the road and bridge maintenance cycle | unit<br>5. Interest level of the participants through the questionnaire. | | | |
| **Outputs**<br>1. The bridge maintenance cycle is established. | 1-1. The annual action plan for bridge maintenance cycle is developed by June every year for each targeted DPWT.<br>1-2. The above action plan is approved by August every year.<br>1-3. At least 5 officials of RID engineers pass exam of bridge maintenance cycle.<br>1-4. The annual bridge maintenance budget is drafted at the target DPWTs of 2nd year and 3rd year by May every year. | 1-1. The annual action plan and it's date developed<br>1-2. The approved date<br>1-3. The exam results and participants list<br>1-4. The drafted budget and its date | - The trained staff/officers remain at the job.<br>- Roles of DPWTs and other concerning offices and units are not changed including budget preparation system. | | |
| 2. Road and bridge inspection capacity of RID is enhanced. | 2-1. The road and bridge maintenance manuals are drafted by August 2015 and finalized by June 2017.<br>2-2. The selected roads and bridges in the targeted DPWTs are inspected according to the maintenance manual.<br>2-3. The inspection results are registered to the road and bridge database by RID until November every year.<br>2-4. At least 5 officials of RID's engineers pass road and bridge inspection test. | 2-1. The manuals and its' date prepared<br>2-2. Inspection record and sample on-site confirmation<br>2-3. Inspection record and corresponding data for sample check<br>2-4. The test results and participants list | | | |
| 3. Road and bridge repair capacity of RID is enhanced. | 3-1. The road and bridge repair manuals are drafted by January 2016 and finalized by June 2017.<br>3-2. The identified roads and bridges in the targeted DPWTs are repaired according to the repair manuals and the | 3-1. The manuals and its' date prepared<br>3-2. Repair record and sample on-site confirmation<br>3-3. Repair record and corresponding data for | | | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| | inspection results.<br>3-3. The repair results are registered to the road and bridge database by RID within 1 month after the completion of repair works.<br>3-4. At least 5 officials of RID's engineers pass road and bridge repair test. | sample check<br>3-4. The test results and participants list | | | |
| 4. Road and bridge maintenance cycle is introduced to other DPWTs and concerning agencies. | 4-1. Bridge inspection is carried out at the more than 80% DPWTs (20/25 DPWTs).<br>4-2. More than 80% DPWTs attends the seminar held in the Project.<br>4-3. The project activities are disseminated to other agencies concerning road/bridge maintenance. (number is not specified but with increments through the project) | 4-1. Bridge inventory data<br>4-2. The participants list<br>4-3. Publicity matter | | | |

| Activities | Inputs | | |
|---|---|---|---|
| 1-1. To review the present bridge maintenance cycle and the works of RID in comparison to the existing Japanese system<br>1-2. To propose annual action plan for bridge maintenance cycle to establish a proper bridge maintenance cycle based on the review results<br>1-3. To practice the action plan<br>1-4. To hold workshop of the bridge maintenance cycle<br>1-5. To prepare draft annual bridge maintenance budget<br><br>2-1. To review and develop road maintenance manual<br>2-2. To review and develop bridge maintenance manual, including a database frame<br>2-3. To hold training workshops on road and bridge inspections<br>2-4. To inspect roads and bridges and prepare rough cost estimation of the repair works at the target DPWTs<br>2-5. To register the inspection results in the database at the | (Japan side)<br>1 A chief advisor / A long term expert<br><br>2 Short term experts<br>1) Team Leader / Bridge Maintenance Engineer<br>2) Deputy-team leader / Road Maintenance Planner<br>3) Bridge Inspection Engineer<br>4) Bridge Repair Engineer (1) (Planning and Design)<br>5) Bridge Repair Engineer (2) (Repairing work Expert)<br>6) Bridge Maintenance Planner<br>7) Road Maintenance Engineer(1)<br>8) Road Maintenance Engineer(2)<br>9) Coordinator / Assistant for | (Cambodia side)<br>1 Arrangement of counterpart personnel<br>1) Project Director<br>2) Project Manager<br>3) Other Necessary Personnel<br><br>2 Implementation cost for the pilot repair works<br><br>3 Travel expenses and allowances for the participants of the seminars and trainings organized as the project activities<br><br>4 Maintenance cost of the JICA project equipment<br><br>5 Office space including its utility cost | - Conditions of roads and bridges under MPWT are not rapidly deteriorated.<br>- Flood with large scale is not occurred annually. |

| | | | |
|---|---|---|---|
| target DPWTs<br>2-6. To revise the road and bridge maintenance manuals incorporating lessons learned from the above activities by organizing review workshops<br><br>3-1. To review and establish road repair manual<br>3-2. To review and establish bridge repair manual<br>3-3. To hold training workshops on road and bridge repairs<br>3-4. To identify roads and bridges for the pilot repair works based on the inspection results at the target DPWTs<br>3-5. To establish repair plan for the identified roads and bridges at the target DPWTs<br>3-6. To repair the identified roads and bridges at the target DPWTs<br>3-7. To evaluate the above repair works<br>3-8. To revise the road and bridge repair manual incorporating lessons learned from the above activities by organizing review workshop by organizing review workshop<br><br>4-1. To organize seminars for other DPWTs – trainings on road and bridge inspection<br>4-2. To organize seminars for other DPWTs – trainings on road and bridge repair<br>4-3. To organize the project wrap-up seminar | Road and Bridge Inspection<br>10) Coordinator for other relevant project / C/P training Supervision<br><br>3 Equipment for road and bridge maintenance<br><br>4 C/P training<br><br>5 Cost for seminars and Trainings as the project activities | (electricity, water, internet and other necessary office facilities)<br><br>6 Etc. | |

# Project Monitoring Sheet I (Revision of Project Design Matrix)

Version 2

Dated January 2016

**Project Title:** The Project for Strengthening Capacity for Maintenance of Roads and Bridges
**Implementation Agency:** Road Infrastructure Department of Ministry of Public Work and Transport (RID MPWT)
**Target Groups:** Engineers of RID
**Period of Project:** April 2015 – March 2018
**Project Site:** Cambodia
**Target Area:** Roads and Bridges under MPWT

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| **Overall Goal**<br>Appropriate maintenance of roads and bridges is managed by MPWT. | 1. The road and bridge database is updated once / a year.<br>2. Road and bridge maintenance plans are updated once / a year base on the result of the road and bridge database updated.<br>3. Road and bridge maintenance is carried out based on the road and bridge maintenance plan and the maintenance and repair manuals, under supervision of RID.<br>4. The road maintenance and repair manuals, and the bridge maintenance and repair manuals are regularly reviewed. | 1. Log record of the database, random sample check of individual data<br>2. The maintenance plans, corresponding data from the database<br>3. The maintenance record, the maintenance plans and manuals<br>4. Minutes of the review meeting | - Country's socio-political situation does not change rapidly. | | |
| **Project Purpose**<br>Capacity of RID to supervise implementing bodies maintaining roads and bridges is enhanced. | 1. Inspection results done by the three target DPWTs are approved by RID based on the manuals by the end of the Project.<br>2. Repair results done by the two target DPWTs are approved by RID base on the manuals by the end of the Project.<br>3. The above two target DPWTs prepare | 1. DPWT inspection reports and on-site confirmation by RID<br>2. DPWT repair reports and on-site confirmation by RID.<br>3. The said draft budget and its submission date | - Organizational arrangement of MPWT is not changed drastically. | | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| | a draft budget for roads and bridge maintenance for FY 2018 respectively within pre-agreed schedule.<br>4. Road and bridge maintenance cycle is explained and shared to concerning offices and units at the project wrap-up seminar.<br>5. Maintenance budget of road and bridge is prepared by RID according to the road and bridge maintenance cycle | 4. Number and name of the participated offices and unit<br>5. Interest level of the participants through the questionnaire. | | | |
| **Outputs**<br>1. The bridge maintenance cycle is established. | 1-1. The annual action plan for bridge maintenance cycle is developed and approved by August every year for each targeted DPWT.<br>1-2. At least 5 officials of RID engineers pass exam of bridge maintenance cycle.<br>1-3. The annual bridge maintenance budget is drafted at the target DPWTs of 2nd year and 3rd year by May every year.<br>1-4. 3 Year Bridge Maintenance Strategic Plan of short term is prepared by RID/MPWT every August | 1-1. The annual action plan and it's date developed and approved<br>1-2. The exam results and participants list<br>1-3. The drafted budget and its date<br>1-4. 3 Year Bridge Maintenance Strategic Plan | - The trained staff/officers remain at the job.<br>- Roles of DPWTs and other concerning offices and units are not changed including budget preparation system. | | |
| 2. Road and bridge inspection capacity of RID is enhanced. | 2-1. The road and bridge maintenance manuals are drafted by August 2015 and finalized by June 2017.<br>2-2. The selected bridges of all DPWTs are inspected according to the maintenance manual.<br>2-3. The selected roads in the targeted DPWTs are inspected according to the maintenance manual<br>2-4. The inspection results are registered | 2-1. The manuals and its' date prepared<br>2-2. Inspection record and sample on-site confirmation<br>2-3. Inspection record and corresponding data for sample check<br>2-4. The test results and participants list | | | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| | to the road and bridge database by RID until November every year.<br>2-5. At least 5 officials of RID's engineers pass road and bridge inspection test. | | | | |
| 3. Road and bridge repair capacity of RID is enhanced. | 3-1. The road and bridge repair manuals are drafted by January 2016 and finalized by June 2017.<br>3-2. The identified roads and bridges in the targeted DPWTs are repaired according to the repair manuals and the inspection results.<br>3-3. The repair results are registered to the road and bridge database by RID within 1 month after the completion of repair works.<br>3-4. At least 5 officials of RID's engineers pass road and bridge repair test. | 3-1. The manuals and its' date prepared<br>3-2. Repair record and sample on-site confirmation<br>3-3. Repair record and corresponding data for sample check<br>3-4. The test results and participants list | | | |
| 4. Road and bridge maintenance cycle is introduced to other DPWTs and concerning agencies. | 4-1. Bridge inspection is carried out at the more than 80% DPWTs (20/25 DPWTs).<br>4-2. More than 80% DPWTs attends the seminar held in the Project.<br>4-3. The project activities are disseminated to other agencies concerning road/bridge maintenance. (number is not specified but with increments through the project) | 4-1. Bridge inventory data<br>4-2. The participants list<br>4-3. Publicity matter | | | |

| **Activities** | **Inputs** | | |
|---|---|---|---|
| 1-1. To review the present bridge maintenance cycle and the works of RID in comparison to the existing Japanese system<br>1-2. To propose 3 year bridge maintenance strategic plan with the annual action plan to establish a proper bridge maintenance cycle<br>1-3. To propose annual action plan for bridge maintenance cycle to establish a proper bridge maintenance cycle based on the review results<br>1-4. To practice the action plan<br>1-5. To hold workshop of the bridge maintenance cycle<br>1-6. To prepare draft annual bridge maintenance budget<br><br>2-1. To review and develop road maintenance manual<br>2-2. To review and develop bridge maintenance manual, including a database frame<br>2-3. To hold training workshops on road and bridge inspections<br>2-4. For bridge, to inspect bridges and prepare rough cost estimation of the repair works for all DPWTs<br>2-5. For roads, to inspect roads using IRI and prepare rough cost estimation of the repair works at the target DPWTs<br>2-6.To register the inspection results in the database by RID<br>2-7. To revise the road and bridge maintenance manuals incorporating lessons learned from the above activities by organizing review workshops<br>2-8. To conduct preliminary study on overloading control (at Tsubasa Bridge)<br><br>3-1. To review and establish road repair manual<br>3-2. To review and establish bridge repair manual<br>3-3. To hold training workshops on road and bridge repairs<br>3-4. To identify roads and bridges for the pilot repair works based on the inspection results at the target DPWTs<br>3-5. To establish repair plan for the identified roads and bridges | (Japan side)<br>1. A chief advisor / A long term expert<br><br>2. Short term experts<br>1) Team Leader / Bridge Maintenance Engineer<br>2) Deputy-team leader / Road Maintenance Planner<br>3) Bridge Inspection Engineer<br>4) Bridge Repair Engineer (1) (Planning and Design)<br>5) Bridge Repair Engineer (2) (Repairing work Expert)<br>6) Bridge Maintenance Planner<br>7) Road Maintenance Engineer(1)<br>8) Road Maintenance Engineer(2)<br>9) Coordinator / Assistant for Road and Bridge Inspection<br>10) Coordinator for other relevant project / C/P training Supervision<br>11) Road Maintenance Engineer (3) (Overloading Control)<br><br>3. Equipment for road and bridge maintenance<br><br>4. C/P training<br><br>5. Cost for seminars and Trainings as the project activities | (Cambodia side)<br>1. Arrangement of counterpart personnel<br>1) Project Director<br>2) Project Manager<br>3) Other Necessary Personnel<br><br>2. Implementation cost for the pilot repair works<br><br>3. Travel expenses and allowances for the participants of the seminars and trainings organized as the project activities<br><br>4. Maintenance cost of the JICA project equipment<br><br>5. Office space including its utility cost (electricity, water, internet and other necessary office facilities)<br><br>6. Etc. | - Conditions of roads and bridges under MPWT are not rapidly deteriorated.<br>- Flood with large scale is not occurred annually.<br><br>Pre-condition<br>N/A |

| | | | |
|---|---|---|---|
| at the target DPWTs<br>3-6. To repair the identified roads and bridges at the target DPWTs<br>3-7. To evaluate the above repair works<br>3-8. To revise the road and bridge repair manual incorporating lessons learned from the above activities by organizing review workshop by organizing review workshop<br><br>4-1. To organize seminars for other DPWTs – trainings on road and bridge inspection<br>4-2. To organize seminars for other DPWTs – trainings on road and bridge repair<br>4-3. To organize the project wrap-up seminar | | | |

# Project Monitoring Sheet I (Revision of Project Design Matrix)

Version 2

Dated January 18 2016

**Project Title:** The Project for Strengthening Capacity for Maintenance of Roads and Bridges
**Implementation Agency:** Road Infrastructure Department of Ministry of Public Work and Transport (RID MPWT)
**Target Groups:** Engineers of RID
**Period of Project:** April 2015 – March 2018
**Project Site:** Cambodia
**Target Area:** Roads and Bridges under MPWT

| Project Summary | Objectively Verifiable Indicators | Objectively Verifiable Indicators | Remarks |
|---|---|---|---|
| | Original | Amendment | |
| **Overall Goal**<br>Appropriate maintenance of roads and bridges is managed by MPWT. | 1. The road and bridge database is updated once / a year.<br>2. Road and bridge maintenance plans are updated once / a year base on the result of the road and bridge database updated.<br>3. Road and bridge maintenance is carried out based on the road and bridge maintenance plan and the maintenance and repair manuals, under supervision of RID.<br>4. The road maintenance and repair manuals, and the bridge maintenance and repair manuals are regularly reviewed. | 1. The road and bridge database is updated once / a year.<br>2. Road and bridge maintenance plans are updated once / a year base on the result of the road and bridge database updated.<br>3. Road and bridge maintenance is carried out based on the road and bridge maintenance plan and the maintenance and repair manuals, under supervision of RID.<br>4. The road maintenance and repair manuals, and the bridge maintenance and repair manuals are regularly reviewed. | No amendment |
| **Project Purpose**<br>Capacity of RID to supervise implementing bodies maintaining roads and bridges is enhanced. | [Inspection]<br>1. Inspection results done by the three target DPWTs are approved by RID based on the manuals by the end of the Project.<br><br>[Implementation]<br>2. Repair results done by the two target | [Inspection]<br>1. Inspection results done by the three target DPWTs are reflected to the annual budget plan.<br><br>[Implementation]<br>2. Repair results done by the two target | No change<br><br>No change |

| Project Summary | Objectively Verifiable Indicators<br>Original | Objectively Verifiable Indicators<br>Amendment | Remarks |
|---|---|---|---|
| | DPWTs are approved by RID base on the manuals by the end of the Project.<br><br>[Budgeting]<br>3. The above two target DPWTs prepare a draft budget for roads and bridge maintenance for FY 2018 respectively within pre-agreed schedule.<br><br>4. Road and bridge maintenance cycle is explained and shared to concerning offices and units at the project wrap-up seminar.<br><br>5. Maintenance budget of road and bridge is prepared by RID according to the road and bridge maintenance cycle | DPWTs are approved by RID based on the manuals.<br><br>3. Maintenance budget of road and bridge is prepared annualy by RID according to the road and bridge maintenance cycle | No change<br><br>No change<br><br>No change |
| **Outputs**<br>1. The bridge maintenance cycle is established.<br><br><br><br><br><br><br><br><br>2. Road and bridge inspection capacity of RID is enhanced. | 1-1. The annual action plan for bridge maintenance cycle is developed by June every year for each targeted DPWT.<br>1-2. The above action plan is approved by August every year.<br>1-3. At least 5 officials of RID engineers pass exam of bridge maintenance cycle.<br>1-4. The annual bridge maintenance budget is drafted at the target DPWTs of 2nd year and 3rd year by May every year.<br><br><br><br>2-1. The road and bridge maintenance manuals are drafted by August 2015 and finalized by June 2017. | 1-1. The annual action plan for bridge maintenance cycle is developed and approved by August every year for each targeted DPWT.<br>1-2. At least 5 officials of RID engineers pass exam of bridge maintenance cycle.<br><br>1-3. The annual bridge maintenance budget is drafted at the target DPWTs of 2nd year and 3rd year by May every year.<br>1-4. 3 Year Bridge Maintenance Strategic Plan of short term is prepared by RID/MPWT every August<br><br>2-1. The road and bridge maintenance manuals are drafted by August 2015 and finalized by June 2017.<br>2-2. The selected bridges of all DPWTs are inspected according to the maintenance | No change<br>No change<br>No change<br>No change<br><br>Addition<br>3 Year Bridge Maintenance Strategic Plan<br>**Amendment in accordance with actual project activity for bridge.**<br><br>No change |

| Project Summary | Objectively Verifiable Indicators<br>Original | Objectively Verifiable Indicators<br>Amendment | Remarks |
|---|---|---|---|
| | 2-2. The selected roads and bridges in the targeted DPWTs are inspected according to the maintenance manual. | manual.<br>2-3. The selected roads in the targeted DPWTs are inspected according to the maintenance manual. | For bridge, all DPWTs |
| | . | . | For roads, target DPWTs (same to original PDM) |
| | . | 2-4. The inspection results are registered to the road and bridge database by RID by November every year. | |
| | . | . | |
| | 2-3. The inspection results are registered to the road and bridge database by RID until November every year. | . | No change |
| | . | 2-5. At least 5 officials of RID's engineers pass road and bridge inspection test. | |
| | . | . | |
| | 2-4. At least 5 officials of RID's engineers pass road and bridge inspection test. | . | No change |
| | . | 3-1. The road and bridge repair manuals are drafted by January 2016 and finalized by June 2017. | |
| 3. Road and bridge repair capacity of RID is enhanced. | 3-1. The road and bridge repair manuals are drafted by January 2016 and finalized by June 2017. | 3-2. The identified roads and bridges in the targeted DPWTs are repaired according to the repair manuals and the inspection results. | No change |
| | 3-2. The identified roads and bridges in the targeted DPWTs are repaired according to the repair manuals and the inspection results. | 3-3. The repair results are registered to the road and bridge database by RID within 1 month after the completion of repair works. | No change |
| | 3-3. The repair results are registered to the road and bridge database by RID within 1 month after the completion of repair works. | 3-4. At least 5 officials of RID's engineers pass road and bridge repair test. | No change |
| | 3-4. At least 5 officials of RID's engineers pass road and bridge repair test. | 4-1. Bridge inspection is carried out at more than 80% DPWTs (20/25 DPWTs). | No change |
| | 4-1. Bridge inspection is carried out at the more than 80% DPWTs (20/25 DPWTs). | 4-2. More than 80% DPWTs attends the seminar held in the Project. | No change |
| 4. Road and bridge maintenance cycle is introduced to other DPWTs and concerning agencies. | 4-2. More than 80% DPWTs attends the seminar held in the Project. | 4-3. The project activities are disseminated to other agencies concerning road/bridge | No change |

| Project Summary | Objectively Verifiable Indicators | Objectively Verifiable Indicators | Remarks |
|---|---|---|---|
| | Original | Amendment | |
| | 4-3. The project activities are disseminated to other agencies concerning road/bridge maintenance. (number is not specified but with increments through the project) | maintenance. (number is not specified but with increments through the project) | |

**In regards to Activities**

| Activities | Original | Amendment | Remarks |
|---|---|---|---|
| **Output 1** | 1-1.To review the present bridge maintenance cycle and the works of RID in comparison to the existing Japanese system | 1-1.To review the present bridge maintenance cycle and the works of RID in comparison to the existing Japanese system | No change |
| | 1-2.To propose annual action plan for bridge maintenance cycle to establish a proper bridge maintenance cycle based on the review results | 1-2. To propose 3 year bridge maintenance strategic plan with the annual action plan to establish a proper bridge maintenance cycle | Addition of 3 Year Bridge Maintenance Strategic Plan |
| | 1-3.To practice the action plan | 1-3.To practice the action plan | No change |
| | 1-4.To hold workshop of the bridge maintenance cycle | 1-4.To hold workshop of the bridge maintenance cycle | No change |
| | 1-5.To prepare draft annual bridge maintenance budget | 1-5.To prepare draft annual bridge maintenance budget | No change |
| **Output 2** | 2-1.To review and develop road maintenance manual | 2-1.To review and develop road maintenance manual | No change |
| | 2-2.To review and develop bridge maintenance manual, including a database frame | 2-2.To review and develop bridge maintenance manual, including a database frame | No change |
| | 2-3.To hold training workshops on road and bridge inspections | 2-3.To hold training workshops on road and bridge inspections | No change |
| | 2-4.To inspect roads and bridges and prepare rough cost estimation of the repair works at the target DPWTs | 2-4. For bridge, to inspect bridges and prepare rough cost estimation of the repair works for all DPWTs | Amendment, For bridge all DPWTs |
| | | 2-5. For roads, to inspect roads using IRI and prepare rough cost estimation of the repair works at the target DPWTs | Amendment, for roads, target DPWTs(same to original PDM) Improvement of inspection accuracy by using IRI. |
| | 2-5.To register the inspection results in the database at the target DPWTs | 2-6.To register the inspection results in the database by RID | Amendment, RID to database register |
| | 2-6.To revise the road and bridge maintenance manuals incorporating lessons learned from the above activities by organizing review workshops | 2-7.To revise the road and bridge maintenance manuals incorporating lessons learned from the above activities by organizing review workshops | No change |
| | | 2-8. To conduct preliminary study on overloading control (at Tsubasa Bridge) | Addition, overloading control |

| | | | |
|---|---|---|---|
| **Output 3** | 3-1.To review and establish road repair manual<br>3-2.To review and establish bridge repair manual<br>3-3.To hold training workshops on road and bridge repairs<br>3-4.To identify roads and bridges for the pilot repair works based on the inspection results at the target DPWTs<br>3-5.To establish repair plan for the identified roads and bridges at the target DPWTs<br>3-6.To repair the identified roads and bridges at the target DPWTs<br>3-7.To evaluate the above repair works<br>3-8.To revise the road and bridge repair manual incorporating lessons learned from the above activities by organizing review workshop by organizing review workshop | 3-1.To review and establish road repair manual<br>3-2.To review and establish bridge repair manual<br>3-3.To hold training workshops on road and bridge repairs<br>3-4.To identify roads and bridges for the pilot repair works based on the inspection results at the target DPWTs<br>3-5.To establish repair plan for the identified roads and bridges at the target DPWTs<br>3-6.To repair the identified roads and bridges at the target DPWTs<br>3-7.To evaluate the above repair works<br>3-8.To revise the road and bridge repair manual incorporating lessons learned from the above activities by organizing review workshop by organizing review workshop | No change<br>No change<br>No change<br>No change<br>No change<br>No change<br>No change<br>No change |
| **Output 4** | 4-1.To organize seminars for other DPWTs – trainings on road and bridge inspection<br>4-2.To organize seminars for other DPWTs – trainings on road and bridge repair<br>4-3.To organize the project wrap-up seminar | 4-1.To organize seminars for other DPWTs – trainings on road and bridge inspection<br>4-2.To organize seminars for other DPWTs – trainings on road and bridge repair<br>4-3.To organize the project wrap-up seminar | No change<br>No change<br>No change |

**In regards to Input**

| Inputs | Original | Amendment | Remarks |
|---|---|---|---|
| | (Japan side)<br>1. A chief advisor / A long term expert<br>2. Short term experts<br>1) Team Leader / Bridge Maintenance Engineer<br>2) Deputy-team leader / Road Maintenance Planner<br>3) Bridge Inspection Engineer<br>4) Bridge Repair Engineer (1) (Planning and Design)<br>5) Bridge Repair Engineer (2) (Repairing work Expert)<br>6) Bridge Maintenance Planner<br>7) Road Maintenance Engineer(1)<br>8) Road Maintenance Engineer(2)<br>9) Coordinator / Assistant for Road and Bridge Inspection<br>10) Coordinator for other relevant project / C/P training Supervision<br><br><br><br>3. Equipment for road and bridge maintenance<br>4. C/P training<br>5. Cost for seminars and Trainings as the project activities | (Japan side)<br>1. A chief advisor / A long term expert<br>2. Short term experts<br>1) Team Leader / Bridge Maintenance Engineer<br>2) Deputy-team leader / Road Maintenance Planner<br>3) Bridge Inspection Engineer<br>4) Bridge Repair Engineer (1) (Planning and Design)<br>5) Bridge Repair Engineer (2) (Repairing work Expert)<br>6) Bridge Maintenance Planner<br>7) Road Maintenance Engineer(1)<br>8) Road Maintenance Engineer(2)<br>9) Coordinator / Assistant for Road and Bridge Inspection<br>10) Coordinator for other relevant project / C/P training Supervision<br>11) Road Maintenance Engineer (3) (Overloading Control)<br><br>3. A chief advisor / A long term expert<br>4. Short term experts<br>5. Cost for seminars and Trainings as the project activities | No change<br>No change<br><br><br><br><br><br><br><br><br><br>Addition<br><br>No change<br>No change<br>No change |
| | (Cambodian Side)<br>1. Arrangement of counterpart personnel<br>1) Project Director<br>2) Project Manager<br>3) Other Necessary Personnel<br>2. Implementation cost for the pilot repair works<br>3. Travel expenses and allowances for the participants of the seminars and trainings organized as the project activities<br>4. Maintenance cost of the JICA project equipment<br>5. Office space including its utility cost (electricity, water, internet and other necessary office facilities)<br>Etc. | 1. Arrangement of counterpart personnel<br>1) Project Director<br>2) Project Manager<br>3) Other Necessary Personnel<br>2. Implementation cost for the pilot repair works<br>3. Travel expenses and allowances for the participants of the seminars and trainings organized as the project activities<br>4. Maintenance cost of the JICA project equipment<br>5. Office space including its utility cost (electricity, water, internet and other necessary office facilities)<br>Etc. | No change |

Project Monitoring Sheet I (Revision of Plan of Operation)

Ver. 2

Project Title: The Project for Strengthening Capacity for Maintenance of Roads and Bridges

Dated: Jamuary, 2016

| INPUTS | Expert in charge | Plan/ Actual | 2015 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2016 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2017 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2018 1 | 2 | 3 | Remarks | Monitoring Issue | Monitoring Solution |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Expert** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chief Advisor | OGAWA Koichi | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Team Leader / Bridge Maintenance Engineer | MIZOTA Yuzo | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Deputy Team Leader / Road Maintenance Planner | NAKAJIMA Takashi | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bridge Repair Engineer (1) (Plannning and Design) | TOKUMASU Ken | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bridge Repair Engineer (2) (Repairing Work Expert) | SUZUKI Hideyuki | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bridge Inspection Engineer | TSUKAMOTO Shigeaki | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bridge Maintenance Planner | WATANABE Masatoshi | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Road Maintenance Engineer (1) | HEIMA Masayuki | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Road Maintenance Engineer (2) | IBAYASHI Kou | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Road Maintenance Engineer (3) | HAKAMATA Fumio | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coordinator / Assistant for Road and Bridge Inspection | OHTAKE Hiroaki | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coordinator for other Relevant Project | YUMITA Kazuo | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Equipment** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Equipment for Pilot Project | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Training in Japan** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

PM Form 3-3 Monitoring Sheet II

| ACTIVITIES | | Expert in charge | Plan/ Actual | 2015 | | | | | | | | | | | | 2016 | | | | | | | | | | | | 2017 | | | | | | | | | | | | 2018 | | | Responsible Organization | | Achievements | Issue & Countermeasures |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | Japan | Cambodia | | |
| Output-1: The bridge maintenance cycle is established. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-1 | To review the present bridge maintenance cycle and the works of RID in comparison to the existing Japanese system | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-1-1 | To collect existing Data and analyze them with RID | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-1-2 | To study the cases of Japanese bridge maintenance cycle that be able to apply to Cambodia | Mizota / Tokumasu / Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-1-3 | To review the result and discuss with RID | Ogawa / Tokumasu / Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-2 | To propose 3 year bridge maintenance strategic plan with the annual action plan to establish a proper bridge maintenance cycle | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-2-1 | To draft the action plan with RID | Mizota / Nakajima/ Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-2-2 | To supervise "1.2.1 activities" and review with RID for final action plan | Ogawa / Mizota / Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-3 | To practice the action plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-3-1 | To supervise the action of RID and the other organization | Mizota/Nakajima/ Tokumasu/Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-3-2 | To supervise "1.3.1 activities" and evaluate it with RID | Ogawa /Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-4 | To hold workshops of the bridge maintenance cycle | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-4-1 | To prepare workshops and materials for the workshops and explain their part at workshops with RID | Nakajima/Tokumasu/ Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-4-2 | To organize the workshops and review the result with RID | Ogawa / Mizota / Nakajima / Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-5 | To prepare draft annual bridge maintenance budget | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-5-1 | To draft the maintenance budget of target DPWT | Mizota / Nakajima / Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-5-2 | To draft the maintenance budget with RID | Mizota / Nakajima / Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-5-3 | To supervise "1.5.2 activities" and review drafts with RID | Ogawa | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

PM Form 3-3 Monitoring Sheet II

| ACTIVITIES | | Expert in charge | Plan/ Actual | 2015 | | | | | | | | | | | | 2016 | | | | | | | | | | | | 2017 | | | | | | | | | | | | 2018 | | | Responsible Organization | | Achievements | Issue & Countermeasures |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | Japan | Cambodia | | |
| Output-2: Road and bridge inspection capacity of RID is enhanced. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-1 | To review and develop road maintenance manual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-1-1 | To review road maintenance manual with RID | Nakajima / Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-1-2 | To draft new road maintenance manual with RID | Nakajima / Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-1-3 | To supervise "2.1.1-2 activities" and review it with RID | Ogawa / Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-2 | To review and develop bridge maintenance manual, including a database framework | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-2-1 | To draft new bridge maintenance manual with RID | Tokumasu/ Tsukamoto/Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-2-2 | To supervise "2.2.1 activities" and review it with RID for finalizing bridge maintenance manual | Ogawa/Tokumasu/ Tsukamoto/Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-3 | To hold training workshops on road and bridge inspections | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-3-1 | To prepare workshops and materials for the workshops and explain their part at workshops with RID | Tokumasu/Tsukamoto/ Ohtake/Watanabe | Plan | | | | | As Needed | | | | | | | | | | | | As Needed | | | | | | | | | | | | As Needed | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-3-2 | To organize the workshops and review the result with RID | Ogawa/Tokumasu/ Tsukamoto/Ohtake | Plan | | | | | As Needed | | | | | | | | | | | | As Needed | | | | | | | | | | | | As Needed | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4 | For bridge, to inspect bridges and prepare rough cost estimation of the repair works for all DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4-1 | To prepare draft inspection plan for bridges with RID | Tokumasu/ Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4-2 | To implement bridge inspection with RID and DPWTs engineers at all the DPWTs | Tokumasu/ Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4-3 | To prepare rough cost estimation of the repair works for bridges with RID | Tokumasu/ Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4-4 | To supervise "2.4.1-3 activities" and discuss with RID | Ogawa/ Mizota/ Tokumasu/Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-5 | For roads, to inspect roads using IRI and prepare rough cost estimation of the repair works at the target DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-5-1 | To prepare draft inspection plan for roads with RID | Nakajima/ Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-5-2 | To implement road inspection with RID and DPWTs engineers at the target DPWTs | Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-5-3 | To prepare rough cost estimation of the repair works for roads with RID | Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-5-4 | To supervise "2.5.1-3 activities" and discuss with RID | Ogawa/ Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-6 | To register the inspection results in the database by RID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-6-1 | To register the inspection results of roads with RID | Nakajima/ Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-6-2 | To register the inspection results of bridges with RID | Tokumasu/Tsukamoto/ Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-6-3 | To supervise "2.5.1-2 activities" and review the result with RID | Ogawa/ Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-7 | To register the inspection results in the database by RID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-7-1 | To revise the road and bridge maintenance manual with RID | Mizota/Nakajima/ Tokumasu/Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-7-2 | To prepare workshops and materials for the workshops and explain their part at workshops with RID | Mizota/Nakajima/ Tokumasu/Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-7-3 | To organize the workshops and review the result with RID | Ogawa/Mizota / Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-8 | To conduct preliminary study on overloading control (at Tsubasa Bridge) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-8-1 | Overloading enforcement in foreign countries | Hakamada | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-8-2 | Countermeasures against overloading issue at Tsubasa Bridge | Hakamada | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| ACTIVITIES | | Expert in charge | Plan/ Actual | 2015 | | | | | | | | | | 2016 | | | | | | | | | | 2017 | | | | | | | | | | | | 2018 | | | Responsible Organization | | Achievements | Issue & Countermeasures |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | Japan | Cambodia | | |
| Output-3. Road and bridge repair capacity of RID is enhanced. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-1 | To review and establish road repair manual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-1-1 | To review road repair manual with RID | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-1-2 | To draft new road repair manual with RID | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-1-3 | To supervise "3.1.1-2 activities" and review the result with RID for finalize repair manual | Ogawa / Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-2 | To review and establish bridge repair manual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-2-1 | To review bridge repair manual with RID | Mizota / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-2-2 | To draft new bridge repair manual with RID | Mizota / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-2-3 | To supervise "3.2.1-2 activities" and review the result with RID for finalize repair manual | Ogawa / Mizota / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-3 | To hold training workshops on road and bridge repairs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-3-1 | To prepare workshops and materials for the workshops and explain their part at workshops with RID | Tokumasu | Plan | | | | | | | | As Needed | | | | | | | | | | | | As Needed | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-3-2 | To organize the workshops and review the result with RID | Ogawa / Mizota / Tokumasu | Plan | | | | | | | | As Needed | | | | | | | | | | | | As Needed | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-4 | To identify roads and bridges for the pilot repair works based on the inspection results at the target DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-4-1 | To prepare priority sites list of roads for the pilot repair works with RID | Mizota / Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-4-2 | To prepare priority sites list of bridges for the pilot repair works with RID | Mizota / Nakajima / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-4-3 | To identify roads and bridges for the pilot repair works with RID | Ogawa | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-5 | To establish repair plan for the identified roads and bridges at the target DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-5-1 | To draft repair plan for roads with RID | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-5-2 | To draft repair plan for bridges with RID | Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-5-3 | To review and finalize repair plan for the identified roads and bridges with RID | Ogawa /Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-6 | To repair the identified roads and bridges at the target DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-6-1 | To repair the identified roads with RID and DPWTs engineers at the target DPWTs | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-6-2 | To repair the identified bridges with RID and DPWTs engineers at the target DPWTs | Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-6-3 | To supervise "3.6.1-2 activities" and discuss with RID | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

PM Form 3-3 Monitoring Sheet II

| | ACTIVITIES | Expert in charge | Plan/ Actual | 2015 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2016 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2017 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2018 1 | 2 | 3 | Responsible Organization Japan | Cambodia | Achievements | Issue & Countermeasures |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3-7 | To evaluate the above repair works | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-7-1 | To prepare evaluation report of the roads repair works with RID | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-7-2 | To prepare evaluation report of the bridges repair works with RID | Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-7-3 | To supervise "3.7.1-2 activities" and review the result with RID | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-8 | To revise the road and bridge repair manual incorporating lessons learned from the above activities by organizing review workshop by organizing review workshop | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-8-1 | To draft revise version of road repair manual with RID | Mizota / Nakajima / Heima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-8-2 | To draft revise version of bridge repair manual with RID | Mizota / Nakajima / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-8-3 | To supervise "3.8.1-2 activities" and review the result with RID for finalize revised repair manual | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Output-4. Road and bridge maintenance cycle is introduced to other DPWTs and concerning agencies. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-1 | To organize seminars for other DPWTs – trainings on road and bridge inspection | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-1-1 | To prepare seminars and materials for the seminars and explain their part at workshops with RID | Mizota / Nakajima / Yumita | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-1-2 | To organize the seminars and review the result with RID | Ogawa / Mizota / Yumita | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-2 | To organize seminars for other DPWTs – trainings on road and bridge Repair | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-2-1 | To prepare seminars and materials for the seminars and explain their part at workshops with RID | Mizota / Nakajima / Yumita | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-2-2 | To organize the seminars and review the result with RID | Ogawa/Mizota/ Nakajima/Yumita | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-3 | To organize the project wrap-up seminar for other DPWTs by RID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-3-1 | To organize the project wrap-up seminar for other DPWTs | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Monitoring Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kick-off Meeting | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Kick-off Meeting | | Plan | | ▲ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | ▲22 May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Joint Coordinating Committee | | Plan | | | | ▲ | | | | | | | ▲ | | | | | | ▲ | | | | | | ▲ | | | | | ▲ | | | | | | ▲ | | | | | |
| | | | Actual | | | | ▲10 July | | | | | | | ▲18 January | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Revision of PDM from Version zero to one. | | Plan | | ▲ | | | | | | | | | | | ▲ | | | | | | | | | | | | ▲ | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Submission of Monitoring Sheet | | Plan | | | | ▲ | | | | | | | | ▲ | | | | | | ▲ | | | | | | ▲ | | | | | | ▲ | | | | | | | | |
| | | | Actual | | | | ▲10 July | | | | | | | | ▲12 February | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Reports/Documents | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Final Report | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ▲ | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Evaluation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Terminal Evaluation | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ▲ | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

## TO CR of JICA CAMBODIA OFFICE

### PROJECT MONITORING SHEET

**Project Title : The Project for Strengthening Capacity for Maintenance of Roads and Bridges**

**Version of the Sheet: Ver.3 (July 2016)**

**Name: Yuzo MIZOTA**
**Title: Team Leader**
**Submission Date: 28 July 2016**

# I. Summary

## 1 Progress

### 1-1 Progress of Inputs

| Inputs | Plan as of April 2015 | Actual as of July 2016 |
|---|---|---|
| Experts | **85.17MM**<br>1 Long term expert (chief advisor)<br>10 Short term expert (1.team leader /bridge maintenance engineer, 2.deputy-project/bridge repair engineer, 3. bridge inspection engineer, 4.bridge repair engineer (1), 5. bridge repair engineer (2), 6. bridge maintenance planner, 7. road maintenance engineer (1), 8. road maintenance engineer (2), 9.coordinator/assistant for road and bridge inspection, 10. Coordinator for other relevant project/C/P training supervision | **43.75MM (47.2 %: rate of latest total MM, 92.67 MM)**<br>1 Long term expert (chief advisor)<br>11 Short term expert (1.team leader /bridge maintenance engineer, 2.deputy-project/bridge repair engineer, 3. bridge inspection engineer, 4.bridge repair engineer (1), 5. bridge repair engineer (2), 6. bridge maintenance planner, 7. road maintenance engineer (1), 8. road maintenance engineer (2), 9.coordinator/assistant for road and bridge inspection, 10. Coordinator for other relevant project/C/P training supervision, 11.road maintenance engineer (3) (overloading control) |
| Trainees Received | Provision of training in Cambodia and in Japan or other countries | 1st training in Japan (Oct.13-24 2015, 7 trainees) |
| Equipment | Equipment for bridge and road maintenance | Attachment-1 |
| Others | N/A | N/A |
| Cambodia side Operational Expenses | - Arrangement of counterpart personnel<br>- Implementation cost for pilot repair works<br>- Travel expenses and allowances for participants of the seminars and trainings organized as the project activities<br>- Maintenance cost of the JICA project equipment<br>- Office space including its utility cost | - Arrangement of counterpart personnel<br>- Implementation cost for pilot repair works<br>- Travel expenses and allowances for participants of the seminars and trainings organized as the project activities<br>- Maintenance cost of the JICA project equipment<br>Office space including its utility cost |

## 1-2 Progress of Activities

**Progress of activities is indicated in Monitoring Sheet Form 3-2 (PDM) and Form 3-3 (PO).**

## 1-3 Achievement of Output

| Output/Indicators | Achievement (%) | | Major Results | Status OT: On Time SFT: Scheduled for later DL: Delay |
|---|---|---|---|---|
| | Plan | Actual | | |
| **Output-1: The bridge maintenance cycle is established.** | | | | |
| 1) The annual action plan for bridge maintenance cycle is developed by August every year for each targeted DPWT. | 50 | 90 | All of the nationwide bridges, totally 2,355 bridges, have been inspected while review activities are required. | OT |
| | | 50 | Annual action plan (draft) for bridge maintenance was prepared through a drafted 3-year bridge maintenance plan while a detailed action plan should be prepared for targeted DPWTs. | OT |
| 2) At least 5 officials of RID engineers pass exam of bridge maintenance cycle | 50 | 80 | Four (4) RID officials completed Maintenance Expert (ME) program required by Japanese experts. | OT |
| 3) The annual bridge maintenance budget is drafted at the target DPWTs of 2nd year and 3rd year by May every year. | 50 | 50 | Annual bridge maintenance budget is drafted at the target DPWTs through a drafted 3-year bridge maintenance plan while review activities are required. | OT |
| 4) 3 year bridge maintenance strategic plan of short term is prepared by RID/MPWT every August | 70 | 70 | A 3-year bridge maintenance strategic plan is drafted while review activities are required. | OT |
| **Output-2: Road and bridge inspection capacity of RID is enhanced.** | | | | |
| 1) The road and bridge maintenance manuals are drafted by August 2015 and finalized by June 2017. | 70 | 70 | The road and bridge maintenance manuals are drafted. Khmer versions are being prepared. | OT |
| 2) The selected bridges of all DPWTs are inspected according | 70 | 90 | The selected bridges of all DPWTs were inspected according to the maintenance manual. | OT |
| | | 50 | A pilot project for overloading control at Tsubasa | DL |

| | | | | |
|---|---|---|---|---|
| to the maintenance manual. | | | Bridge started behind the proposed schedule of preliminary study. | |
| 3) The selected roads in the targeted DPWTs are inspected according to the maintenance manual | 50 | 50 | 1-digit roads throughout the nation and the selected roads in Kandal province were successfully inspected by IRI-based inspection method according to the maintenance manual. Selected roads in Takeo province are also planned to be inspected as well. | OT |
| 4) The inspection results are registered to the road and bridge database by RID until November every year. | 70 | 70 | Database was created and installed in RID director office, which required improvement for maintenance management efficiency. | OT |
| 5) At least 5 officials of RID's engineers pass road and bridge inspection test. | 50 | 80 | Four (4) RID officials completed ME bridge program and two (2) RID officials completed ME road program, instructed by Japanese experts. | OT |
| **Output-3. Road and bridge repair capacity of RID is enhanced.** | | | | |
| 1) The road and bridge repair manuals are drafted by January 2016 and finalized by June 2017. | 70 | 70 | The road and bridge repair manuals are drafted. Khmer versions are being prepared. | OT |
| 2) The identified roads and bridges in the targeted DPWTs are repaired according to the repair manuals and the inspection results. | 50 | 50 | The 1st pilot project for road repair work has been implemented for selected roads in Kandal province.<br>3 bridges from Kandal province and 2 bridges from Phnom Penh were repaired by crack sealing method through the 1st pilot project.<br>The identified roads and bridges managed by the target DPWTs are to be repaired in the 2nd pilot project. | OT |
| 3) The repair results are registered to the road and bridge database by RID within 1 month after the completion of repair works. | 40 | 40 | The repair results of the 1st pilot project are registered in the database system while those of the 2nd pilot project will be installed upon completion of the project. Review of database is required. | OT |
| 4) At least 5 officials of RID's engineers pass road and bridge repair test. | 50 | 80 | Four (4) RID officials completed bridge Maintenance Expert (ME) training program and three (3) RID officials completed road ME training program, instructed by Japanese experts. | OT |
| **Output-4. Road and bridge maintenance cycle is introduced to other DPWTs and concerning agencies** | | | | |
| 1) Bridge inspection is carried out at the more than 80% DPWTs (20/25 DPWTs). | 50 | 90 | Bridge inspection of all DPWTs was completed while a review work of database is required. | OT |

<table>
<tr>
<td>2) More than 80% DPWTs attends the seminar held in the Project.</td>
<td>50</td>
<td>50</td>
<td>Ten (10) DPWTs attended the series of seminars.<br>Attendance Rate :
<table>
<tr><th></th><th>1st</th><th>2nd</th><th>3rd</th><th>4th</th><th>5th</th><th>6th</th><th>SIP 1</th><th>SIP 2</th></tr>
<tr><td>RID</td><td>18</td><td>14</td><td>11</td><td>6</td><td>9</td><td>12</td><td>17</td><td>2</td></tr>
<tr><td>DPWT</td><td>-</td><td>0</td><td>-</td><td>0</td><td>43</td><td>8</td><td>61</td><td>20</td></tr>
<tr><td>ITC</td><td></td><td></td><td></td><td></td><td></td><td></td><td>327</td><td></td></tr>
<tr><td>Other</td><td>13</td><td>9</td><td>11</td><td>0</td><td>9</td><td>11</td><td>69</td><td>35</td></tr>
<tr><td>Total</td><td>31</td><td>23</td><td>22</td><td>6</td><td>61</td><td>31</td><td>474</td><td>57</td></tr>
</table>
<table>
<tr><th></th><th>7th</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></tr>
<tr><td>RID</td><td>6</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>DPWT</td><td>2</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Other</td><td>7</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Total</td><td>15</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table>
Attendance of DPWTs: 40% (10 out of 25 DPWTS)</td>
<td>OT</td>
</tr>
<tr>
<td>3) The project activities are disseminated to other agencies concerning road/bridge maintenance. (number is not specified but with increments through the project)</td>
<td>20</td>
<td>20</td>
<td>In kickoff seminar on 22 May 2015, the outline of the project activities was disseminated to MPWT, DPWTs, MEF, WB and ADB.<br>SIP seminar held in March 2016 disseminated road and bridge maintenance techniques to MPWT, DPWTs and ITC.</td>
<td>OT</td>
</tr>
</table>

## 1-4 Achievement of the Project Purpose

| Project Purpose/Indicators | Achievement (%) | Situation | Expected Time of achievement |
|---|---|---|---|
| Project Purpose: Capacity of RID to supervise implementing bodies maintaining roads and bridges is enhanced. | | | |
| 1) Inspection results done by the three target DPWTs are approved by RID based on the manuals by the end of the Project. | 30 | [Road] all 1-digit roads and selected roads in Kandal province (not limited to the target DPWTs) were inspected using DRIMS based on the manual.<br>[Bridge] Completion of inspection of all the bridges under DPWTs (not limited to the target DPWTs) and basic bridge inventory database. | OT |
| 2) Repair results done by the two target | 30 | [Road][Bridge] It was decided to formulate a repair manual to specify standard method | OT |

| | | | |
|---|---|---|---|
| DPWTs are approved by RID based on the manuals by the end of the Project | | statements of repair works (Job Sheet style) and selected working team completed the manual. | |
| 3) The above two target DPWTs prepare a draft budget for roads and bridge maintenance for FY 2018 respectively within pre-agreed schedule. | 30 | [Road] Clarified 46 codes implemented for road repair work by DPWT. Revision of repair guidelines to include all the works is ongoing.<br>[Bridge] Preparation of database and proposition of framework for standard work code items (to be included in budget request) | OT |
| 4) Road and bridge maintenance cycle is explained and shared to concerning offices and units at the project wrap-up seminar. | 30 | [Road] Holding workshops inviting RID and DPWTs<br>[Bridges] Holding workshops inviting RID and DPWTs<br>Proposal of Training Plan, Bridge Maintenance Expert Program | OT |
| 5) Maintenance budget of road and bridge is prepared by RID according to the road and bridge maintenance cycle | 30 | [Road] Manual revision (to include all the work code items into the new manual) (in progress)<br>[Bridge] Manual creation (framework and selection of priority repair items) | OT |

## 1-5 Changes of Risks and Actions for Mitigation

### 1) Activity 2-8: Overloading control

The progress of the activity is delayed a few months to have mature agreement with the counterparts on the activity contents.

### 2) Equipment for bridge inspection tools

As the number of multi-span bridges have increased, needs for appropriate maintenance of such bridges have also increased. Above all, it is important to closely inspect bridge structures in high elevation such as superstructures, where inspectors can't reach easily without specific equipment, in order to maintain their functions. As one of the solutions, the project plans to procure a robotic camera (rod camera) that enables inspectors to more closely and accurately examine the bridge structures in high elevation than visual inspections from distant places. The introduction of the equipment is considered to be essential in order to improve bridge maintenance management skills of Cambodian government officials in charge of bridge maintenance.

### 3) Equipment for road inspection tools

There is a demand to enhance monitoring of the road by using DRIMS and the counterpart decided to procure 2 more sets by their own budget. The project will support the counterpart for procurement and maintenance of the equipment

**4) Facilitate Maintenance Expert (ME) training program**

The ME training program should be encouraged by management level of MPWT.

**1-6 Progress of Actions undertaken by JICA**

**N/A**

**1-7 Progress of Actions undertaken by Gov. of Cambodia**

**N/A**

**1-8 Progress of Environmental and Social Considerations (if applicable)**

**N/A**

**1-9 Progress of Considerations on Gender/Peace Building/Poverty Reduction (if applicable)**

**N/A**

**1-10 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)**

Transfer of management responsibility of national road No.4 (NR4) from private sector to Cambodian Government as of January 14, 2016. The change gave the following effects to the project;

1) Increase of the number of bridges to be inspected and listed in the bridge database (39 more bridges)
2) Duty on RID to measure IRI and evaluate condition of the road.
3) Increase of demand for implementation of repair methods (crack sealing and pothole patching)
4) In regard to IRI measurement for road maintenance, Road Infrastructure Department (RID) will study and clarify the application range of two (2) types of IRI-measurement equipment, DRIMS and ROMDAS.

## 2 Delay of Work Schedule and/or Problems (if any)

**2-1 Detail**

**1) Activity 2-8: Overloading control**

The progress of the activity is delayed a few months to have mature agreement with the counterparts on the activity contents.

**2-2 Cause**

- Procurement of a portable weighing scale

**2-3 Action to be taken**

- The project activity shall start on time using the existing portable weighing scale.
- Training for the new scale operation shall be conducted upon completion of the equipment installation

**2-4 Roles of Responsible Persons/Organizations (JICA, Gov. of Cambodia, etc.)**

**N/A**

## 3 Modification of the Project Implementation Plan

**3-1 PO**

PO of the project is prepared. It is attached as Monitoring Sheet Form 3-3.

**3-2 Other modifications on detailed implementation plan**

***(Remarks: The amendment of R/D and PDM (title of the project, duration, project site(s), target group(s), implementation structure, overall goal, project purpose, outputs, activities, and input) should be authorized by JICA HDQs. If the project team deems it necessary to modify any part of R/D and PDM, the team may propose the draft.)***

**PDM Ver.2 is attached as Monitoring Sheet Form 3-2.**

## 4 Measures undertaken by Gov. of Cambodia or Project Team to Assure the Sustainability of Project after the Project Completion

**4-1 Financial Sustainability**

"3-year bridge maintenance strategic plan" was drafted using the bridge database developed in the project. This plan gives maintenance priority to the each bridge under MPWT considering soundness of the bridges and road functions. This plan is under review by DPWT and to be included in the budget request to MEF to support grounds of for the request.

**4-2 Technical Sustainability**

Guidelines for evaluation system of road conditions using IRI is drafted. This gives a standard method from evaluation of the road conditions to estimation of required costs for maintenance, including priority.

**4-3 Institutional Sustainability**

The project is proposing to create a regulation related to the Maintenance Experts (MEs). This is to specify tasks and responsibilities of the MEs and expected to encourage increase of the number of MEs.

## II. Project Monitoring Sheet I & II *as Attached*

# Project Monitoring Sheet Form 3-2 (Revision of Project Design Matrix)

Version 2

Revised Date July 2016

**Project Title:** The Project for Strengthening Capacity for Maintenance of Roads and Bridges
**Implementation Agency:** Road Infrastructure Department of Ministry of Public Work and Transport (RID MPWT)
**Target Groups:** Engineers of RID
**Period of Project:** April 2015 – March 2018
**Project Site:** Cambodia
**Target Area:** Roads and Bridges under MPWT

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| **Overall Goal**<br>Appropriate maintenance of roads and bridges is managed by MPWT. | 1. The road and bridge database is updated once / a year.<br>2. Road and bridge maintenance plans are updated once / a year base on the result of the road and bridge database updated.<br>3. Road and bridge maintenance is carried out based on the road and bridge maintenance plan and the maintenance and repair manuals, under supervision of RID.<br>4. The road maintenance and repair manuals, and the bridge maintenance and repair manuals are regularly reviewed. | 1. Log record of the database, random sample check of individual data<br>2. The maintenance plans, corresponding data from the database<br>3. The maintenance record, the maintenance plans and manuals<br>4. Minutes of the review meeting | - Country's socio-political situation does not change rapidly. | | |
| **Project Purpose**<br>Capacity of RID to supervise implementing bodies maintaining roads and bridges is enhanced. | 1. Inspection results done by the three target DPWTs are approved by RID based on the manuals by the end of the Project. | 1. DPWT inspection reports and on-site confirmation by RID<br>2. DPWT repair reports and on-site confirmation by RID.<br>3. The said draft budget and its submission date | - Organizational arrangement of MPWT is not changed drastically. | [Road] 1-digit roads throughout the nation and the selected roads in Kandal province were successfully inspected by IRI-based inspection method according to the | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| | | 4. Number and name of the participated offices and unit<br>5. Interest level of the participants through the questionnaire. | | maintenance manual.<br>[Bridge] Completion of inspection of all the bridges under DPWTs (not limited to the target DPWTs) and basic bridge inventory database. | |
| | 2. Repair results done by the two target DPWTs are approved by RID base on the manuals by the end of the Project. | | | [Road][Bridge] It was decided to formulate a repair manual to specify standard method statements of repair works (Job Sheet style) and selected working team completed the manual. | |
| | 3. The above two target DPWTs prepare a draft budget for roads and bridge maintenance for FY 2018 respectively within pre-agreed schedule. | | | [Road] Clarified 46 codes implemented for road repair work by DPWT. Revision of repair guidelines to include all the works is ongoing.<br>[Bridge] Preparation of database and proposition of framework for standard work code items (to be included in budget request) | |
| | 4. Road and bridge maintenance cycle is explained and shared to concerning offices and units at the project | | | [Road] Holding workshops inviting RID and DPWTs | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| | wrap-up seminar.<br><br>5. Maintenance budget of road and bridge is prepared by RID according to the road and bridge maintenance cycle | | | [Bridge] Holding workshops inviting RID and DPWTs Proposal of Training Plan, Bridge Maintenance Expert Program<br><br>[Road] Manual revision (to include all the work code items into the new manual) (in progress)<br>[Bridge] Manual creation (framework and selection of priority repair items) | |
| **<u>Outputs</u>**<br>1. The bridge maintenance cycle is established. | 1-1. The annual action plan for bridge maintenance cycle is developed and approved by August every year for each targeted DPWT.<br><br>1-2. At least 5 officials of RID engineers pass exam of bridge maintenance cycle. | 1-1. The annual action plan and it's date developed and approved<br>1-2. The exam results and participants list<br>1-3. The drafted budget and its date<br>1-4. 3 Year Bridge Maintenance Strategic Plan | - The trained staff/officers remain at the job.<br>- Roles of DPWTs and other concerning offices and units are not changed including budget preparation system. | All of the nationwide bridges, totally 2,355 bridges, have been inspected while review activities are required. Annual action plan (draft) for bridge maintenance was prepared through a drafted 3-year strategic bridge maintenance plan while a detailed action plan should be prepared for targeted DPWTs.<br><br>Four (4) RID officials completed Maintenance Expert | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| | | | | (ME) program required by Japanese experts. | |
| | 1-3. The annual bridge maintenance budget is drafted at the target DPWTs of 2nd year and 3rd year by May every year. | | | Annual bridge maintenance budget is drafted at the target DPWTs through a drafted 3-year bridge maintenance plan while review activities are required. | |
| | 1-4. 3-Year Bridge Maintenance Strategic Plan of short term is prepared by RID/MPWT every August | | | A 3-year bridge maintenance plan is drafted while review activities are required. | |
| 2. Road and bridge inspection capacity of RID is enhanced. | 2-1. The road and bridge maintenance manuals are drafted by August 2015 and finalized by June 2017. | 2-1. The manuals and its' date prepared<br>2-2. Inspection record and sample on-site confirmation<br>2-3. Inspection record and corresponding data for sample check<br>2-4. The test results and participants list | | The road and bridge maintenance manuals are drafted. Khmer versions are being prepared. | |
| | 2-2. The selected bridges of all DPWTs are inspected according to the maintenance manual. | | | The selected bridges of all DPWTs were inspected according to the maintenance manual. | |
| | 2-3. The selected roads in the targeted DPWTs are inspected according to the maintenance manual | | | 1-digit roads throughout the nation and the selected roads in Kandal province were successfully inspected by IRI-based inspection method according to the | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| | | | | maintenance manual. Selected roads in Takeo province are also planned to be inspected as well. | |
| | 2-4. The inspection results are registered to the road and bridge database by RID until November every year. | | | Database was created and installed in RID director office, which required improvement for maintenance management efficiency. | |
| | 2-5. At least 5 officials of RID's engineers pass road and bridge inspection test. | | | Four (4) RID officials completed ME bridge program and two (2) RID officials completed ME road program, instructed by Japanese experts. | |
| 3. Road and bridge repair capacity of RID is enhanced. | 3-1. The road and bridge repair manuals are drafted by January 2016 and finalized by June 2017. | 3-1. The manuals and its date prepared<br>3-2. Repair record and sample on-site confirmation<br>3-3. Repair record and corresponding data for sample check<br>3-4. The test results and participants list | | The road and bridge repair manuals are drafted. Khmer versions are being prepared. | |
| | 3-2. The identified roads and bridges in the targeted DPWTs are repaired according to the repair manuals and the inspection results. | | | The 1st pilot project for road repair work has been implemented for selected roads in Kandal province.<br>3 bridges from Kandal province and 2 bridges from Phnom Penh were repaired by crack sealing method | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| | | | | through the 1st pilot project.<br>The identified roads and bridges managed by the target DPWTs are to be repaired in the 2nd pilot project. | |
| | 3-3. The repair results are registered to the road and bridge database by RID within 1 month after the completion of repair works. | | | The repair results of the 1st pilot project are registered in the database system while those of the 2nd pilot project will be installed upon completion of the project. Review of database is required. | |
| | 3-4. At least 5 officials of RID's engineers pass road and bridge repair test. | | | Four (4) RID officials completed ME bridge program and two (2) RID officials completed ME road program, instructed by Japanese experts. | |
| 4. Road and bridge maintenance cycle is introduced to other DPWTs and concerning agencies. | 4-1. Bridge inspection is carried out at the more than 80% DPWTs (20/25 DPWTs). | 4-1. Bridge inventory data<br>4-2. The participants list<br>Publicity matter | | Bridge inspection of all DPWTs was conducted. | |
| | 4-2. More than 80% DPWTs attends the seminar held in the Project. | | | Ten (10) DPWTs attended the series of seminars. Attendance of DPWTs: 40% (10 out of 25 DPWTS) | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| | 4-3. The project activities are disseminated to other agencies concerning road/bridge maintenance. (number is not specified but with increments through the project) | | | In kickoff seminar on 22 May 2015, the outline of the project activities was disseminated to MPWT, DPWTs, MEF, WB and ADB.<br>SIP seminar held in March 2016 disseminated road and bridge maintenance techniques to MPWT, DPWTs and ITC. | |

| **Activities** | **Inputs** | | |
|---|---|---|---|
| 1-1. To review the present bridge maintenance cycle and the works of RID in comparison to the existing Japanese system<br>1-2. To propose 3 year bridge maintenance strategic plan with the annual action plan to establish a proper bridge maintenance cycle<br>1-3. To propose annual action plan for bridge maintenance cycle to establish a proper bridge maintenance cycle based on the review results<br>1-4. To practice the action plan<br>1-5. To hold workshop of the bridge maintenance cycle<br>1-6. To prepare draft annual bridge maintenance budget<br><br>2-1. To review and develop road maintenance manual<br>2-2. To review and develop bridge maintenance manual, including a database frame<br>2-3. To hold training workshops on road and bridge inspections<br>2-4. For bridge, to inspect bridges and prepare rough cost estimation of the repair works for all DPWTs<br>2-5. For roads, to inspect roads using IRI and prepare rough cost estimation of the repair works at the target DPWTs<br>2-6.To register the inspection results in the database by RID<br>2-7. To revise the road and bridge maintenance manuals incorporating lessons learned from the above activities by organizing review workshops<br>2-8. To conduct preliminary study on overloading control (at Tsubasa Bridge)<br><br>3-1. To review and establish road repair manual<br>3-2. To review and establish bridge repair manual<br>3-3. To hold training workshops on road and bridge repairs<br>3-4. To identify roads and bridges for the pilot repair works based on the inspection results at the target DPWTs<br>3-5. To establish repair plan for the identified roads and bridges at the target DPWTs<br>3-6. To repair the identified roads and bridges at the target DPWTs | (Japan side)<br>1. A chief advisor / A long term expert<br><br>2. Short term experts<br>1) Team Leader / Bridge Maintenance Engineer<br>2) Deputy-team leader / Road Maintenance Planner<br>3) Bridge Inspection Engineer<br>4) Bridge Repair Engineer (1) (Planning and Design)<br>5) Bridge Repair Engineer (2) (Repairing work Expert)<br>6) Bridge Maintenance Planner<br>7) Road Maintenance Engineer(1)<br>8) Road Maintenance Engineer(2)<br>9) Coordinator / Assistant for Road and Bridge Inspection<br>10) Coordinator for other relevant project / C/P training Supervision<br>11) Road Maintenance Engineer (3) (Overloading Control)<br><br>3. Equipment for road and bridge maintenance<br><br>4. C/P training<br><br>5. Cost for seminars and Trainings as the project activities | (Cambodia side)<br>1. Arrangement of counterpart personnel<br>1) Project Director<br>2) Project Manager<br>3) Other Necessary Personnel<br><br>2. Implementation cost for the pilot repair works<br><br>3. Travel expenses and allowances for the participants of the seminars and trainings organized as the project activities<br><br>4. Maintenance cost of the JICA project equipment<br><br>5. Office space including its utility cost (electricity, water, internet and other necessary office facilities)<br><br>6. Etc. | - Conditions of roads and bridges under MPWT are not rapidly deteriorated.<br>- Large-scale flood doesn't occur annually.<br><br>Pre-condition<br>N/A |

| | | | |
|---|---|---|---|
| 3-7. To evaluate the above repair works<br>3-8. To revise the road and bridge repair manual incorporating lessons learned from the above activities by organizing review workshop by organizing review workshop<br><br>4-1. To organize seminars for other DPWTs – trainings on road and bridge inspection<br>4-2. To organize seminars for other DPWTs – trainings on road and bridge repair<br>4-3. To organize the project wrap-up seminar | | | |

Project Monitoring Sheet Form 3-3 (Revision of Plan of Operation)

Ver. 2

Dated: January, 2016

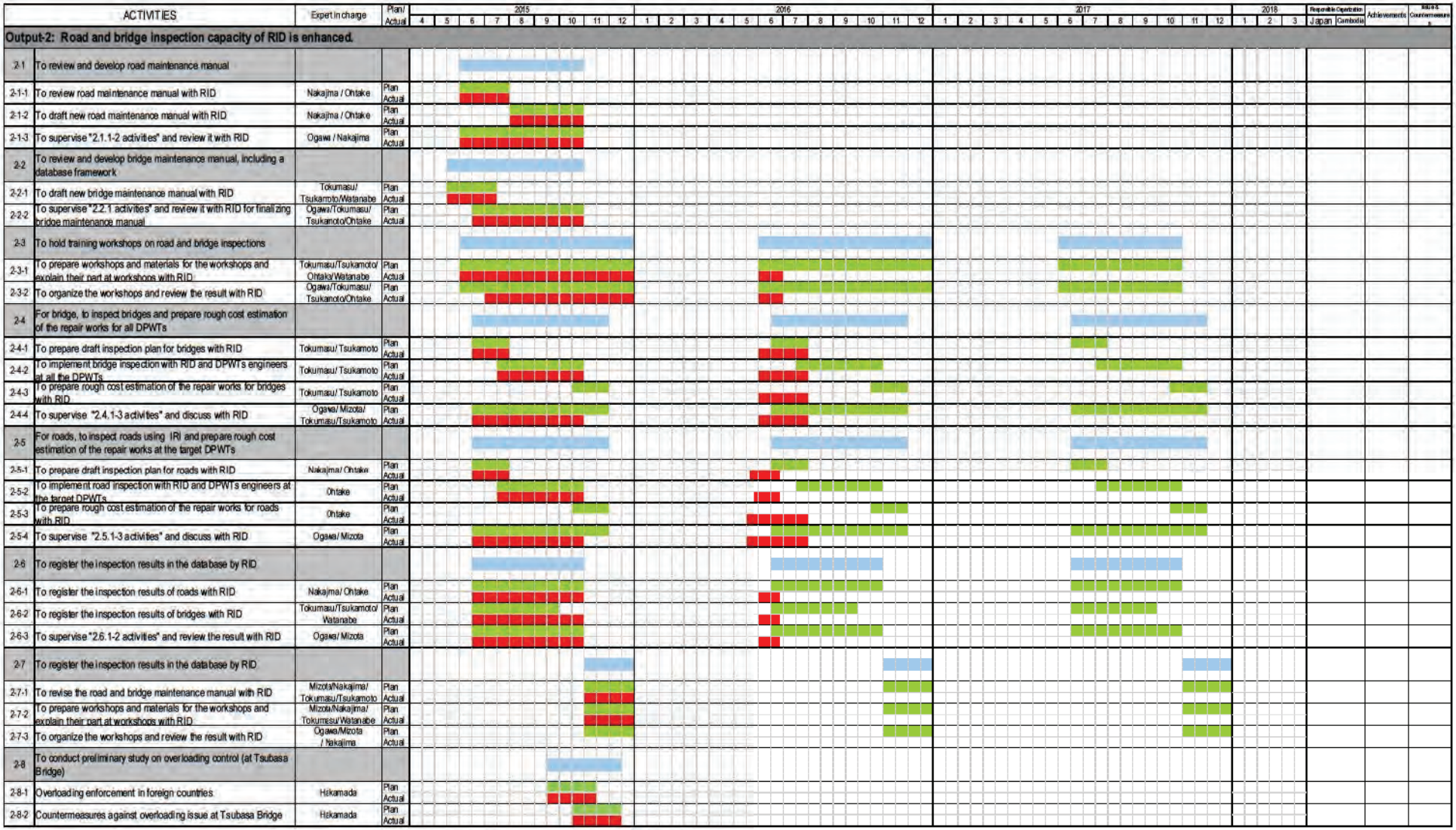
Project Title: The Project for Strengthening Capacity for Maintenance of Roads and Bridges

| INPUTS | Expert in charge | Plan/ Actual | 2015 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2016 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2017 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2018 1 | 2 | 3 | Remarks | Monitoring Issue | Monitoring Solution |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Expert** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chief Advisor | OGAWA Koichi | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Team Leader / Bridge Maintenance Engineer | MIZOTA Yuzo | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Deputy Team Leader / Road Maintenance Planner | NAKAJIMA Takashi | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bridge Repair Engineer (1) (Plannning and Design) | TOKUMASU Ken | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bridge Repair Engineer (2) (Repairing Work Expert) | SUZUKI Hideyuki | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bridge Inspection Engineer | TSUKAMOTO Shigeaki | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bridge Maintenance Planner | WATANABE Masatoshi | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Road Maintenance Engineer (1) | HEIMA Masayuki | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Road Maintenance Engineer (2) | IBAYASHI Kou | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Road Maintenance Engineer (3) | HAKAMATA Fumio | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coordinator / Assistant for Road and Bridge Inspection | OHTAKE Hiroaki | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coordinator for other Relevant Project | MAEDA Tatsuro | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coordinator for other Relevant Project | YUMITA Kazuo | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Equipment** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Equipment for Pilot Project | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Training in Japan** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

PO-1

| | ACTIVITIES | Expert in charge | Plan/ Actual | 2015 | | | | | | | | | | | | 2016 | | | | | | | | | | | | 2017 | | | | | | | | | | | | 2018 | | | Responsible Organization | | Achievements | Issues & Countermeasures |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | Japan | Cambodia | | |
| | | | | | | | | As Needed | | | As Needed | | | | | | | | | As Needed | | | As Needed | | | | | | | | | | | | | | | | | | | | |
| Output-1: The bridge maintenance cycle is established. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-1 | To review the present bridge maintenance cycle and the works of RID in comparison to the existing Japanese system | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-1-1 | To collect existing Data and analyze them with RID | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-1-2 | To study the cases of Japanese bridge maintenance cycle that be able to apply to Cambodia | Mizota / Tokumasu / Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-1-3 | To review the result and discuss with RID | Ogawa / Tokumasu / Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-2 | To propose 3 year bridge maintenance strategic plan with the annual action plan to establish a proper bridge maintenance cycle | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-2-1 | To draft the action plan with RID | Mizota / Nakajima/ Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-2-2 | To supervise "1.2.1 activities" and review with RID for final action plan | Ogawa / Mizota / Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-3 | To practice the action plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-3-1 | To supervise the action of RID and the other organization | Mizota/Nakajima/ Tokumasu/Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-3-2 | To supervise "1.3.1 activities" and evaluate it with RID | Ogawa /Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-4 | To hold workshops of the bridge maintenance cycle | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-4-1 | To prepare workshops and materials for the workshops and explain their part at workshops with RID | Nakajima/Tokumasu/ Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-4-2 | To organize the workshops and review the result with RID | Ogawa / Mizota / Nakajima / Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-5 | To prepare draft annual bridge maintenance budget | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-5-1 | To draft the maintenance budget of target DPWT | Mizota / Nakajima / Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-5-2 | To draft the maintenance budget with RID | Mizota / Nakajima / Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-5-3 | To supervise "1.5.2 activities" and review drafts with RID | Ogawa | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

PO-2



| | ACTIVITIES | Expert in charge | Plan/ Actual | 2015 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2016 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2017 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2018 1 | 2 | 3 | Responsible Organization Japan | Responsible Organization Cambodia | Achievements | Risks & Countermeasures |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Output-2: Road and bridge inspection capacity of RID is enhanced.** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-1 | To review and develop road maintenance manual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-1-1 | To review road maintenance manual with RID | Nakajima / Ohtake | Plan<br>Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-1-2 | To draft new road maintenance manual with RID | Nakajima / Ohtake | Plan<br>Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-1-3 | To supervise "2.1.1-2 activities" and review it with RID | Ogawa / Nakajima | Plan<br>Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-2 | To review and develop bridge maintenance manual, including a database framework | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-2-1 | To draft new bridge maintenance manual with RID | Tokumasu/ Tsukamoto/Watanabe | Plan<br>Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-2-2 | To supervise "2.2.1 activities" and review it with RID for finalizing bridge maintenance manual | Ogawa/Tokumasu/ Tsukamoto/Ohtake | Plan<br>Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-3 | To hold training workshops on road and bridge inspections | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-3-1 | To prepare workshops and materials for the workshops and explain their part at workshops with RID | Tokumasu/Tsukamoto/ Ohtake/Watanabe | Plan<br>Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-3-2 | To organize the workshops and review the result with RID | Ogawa/Tokumasu/ Tsukamoto/Ohtake | Plan<br>Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4 | For bridge, to inspect bridges and prepare rough cost estimation of the repair works for all DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4-1 | To prepare draft inspection plan for bridges with RID | Tokumasu/ Tsukamoto | Plan<br>Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4-2 | To implement bridge inspection with RID and DPWTs engineers at all the DPWTs | Tokumasu/ Tsukamoto | Plan<br>Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4-3 | To prepare rough cost estimation of the repair works for bridges with RID | Tokumasu/ Tsukamoto | Plan<br>Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4-4 | To supervise "2.4.1-3 activities" and discuss with RID | Ogawa/ Mizota/ Tokumasu/Tsukamoto | Plan<br>Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-5 | For roads, to inspect roads using IRI and prepare rough cost estimation of the repair works at the target DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-5-1 | To prepare draft inspection plan for roads with RID | Nakajima/ Ohtake | Plan<br>Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-5-2 | To implement road inspection with RID and DPWTs engineers at the target DPWTs | Ohtake | Plan<br>Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-5-3 | To prepare rough cost estimation of the repair works for roads with RID | Ohtake | Plan<br>Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-5-4 | To supervise "2.5.1-3 activities" and discuss with RID | Ogawa/ Mizota | Plan<br>Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-6 | To register the inspection results in the database by RID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-6-1 | To register the inspection results of roads with RID | Nakajima/ Ohtake | Plan<br>Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-6-2 | To register the inspection results of bridges with RID | Tokumasu/Tsukamoto/ Watanabe | Plan<br>Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-6-3 | To supervise "2.6.1-2 activities" and review the result with RID | Ogawa/ Mizota | Plan<br>Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-7 | To register the inspection results in the database by RID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-7-1 | To revise the road and bridge maintenance manual with RID | Mizota/Nakajima/ Tokumasu/Tsukamoto | Plan<br>Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-7-2 | To prepare workshops and materials for the workshops and explain their part at workshops with RID | Mizota/Nakajima/ Tokumasu/Watanabe | Plan<br>Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-7-3 | To organize the workshops and review the result with RID | Ogawa/Mizota / Nakajima | Plan<br>Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-8 | To conduct preliminary study on overloading control (at Tsubasa Bridge) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-8-1 | Overloading enforcement in foreign countries | Hakamada | Plan<br>Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-8-2 | Countermeasures against overloading issue at Tsubasa Bridge | Hakamada | Plan<br>Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | ACTIVITIES | Expert in charge | Plan/ Actual | 2015 | | | | | | | | | 2016 | | | | | | | | | | | 2017 | | | | | | | | | | | | 2018 | | | Responsible Operation | | Achievements | Risks & Countermeasures |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | Japan | Cambodia | | |
| **Output-3. Road and bridge repair capacity of RID is enhanced.** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-1 | To review and establish road repair manual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-1-1 | To review road repair manual with RID | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-1-2 | To draft new road repair manual with RID | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-1-3 | To supervise "3.1.1-2 activities" and review the result with RID for finalize repair manual | Ogawa / Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-2 | To review and establish bridge repair manual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-2-1 | To review bridge repair manual with RID | Mizota / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-2-2 | To draft new bridge repair manual with RID | Mizota / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-2-3 | To supervise "3.2.1-2 activities" and review the result with RID for finalize repair manual | Ogawa / Mizota / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-3 | To hold training workshops on road and bridge repairs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-3-1 | To prepare workshops and materials for the workshops and explain their part at workshops with RID | Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-3-2 | To organize the workshops and review the result with RID | Ogawa / Mizota / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-4 | To identify roads and bridges for the pilot repair works based on the inspection results at the target DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-4-1 | To prepare priority sites list of roads for the pilot repair works with RID | Mizota / Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-4-2 | To prepare priority sites list of bridges for the pilot repair works with RID | Mizota / Nakajima / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-4-3 | To identify roads and bridges for the pilot repair works with RID | Ogawa | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-5 | To establish repair plan for the identified roads and bridges at the target DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-5-1 | To draft repair plan for roads with RID | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-5-2 | To draft repair plan for bridges with RID | Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-5-3 | To review and finalize repair plan for the identified roads and bridges with RID | Ogawa /Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-6 | To repair the identified roads and bridges at the target DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-6-1 | To repair the identified roads with RID and DPWTs engineers at the target DPWTs | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-6-2 | To repair the identified bridges with RID and DPWTs engineers at the target DPWTs | Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-6-3 | To supervise "3.6.1-2 activities" and discuss with RID | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | ACTIVITIES | Expert in charge | Plan/ Actual | 2015 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2016 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2017 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2018 1 | 2 | 3 | Responsible Operation Japan | Cambodia | Achievements | Issues & Countermeasures |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3-7 | To evaluate the above repair works | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-7-1 | To prepare evaluation report of the roads repair works with RID | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-7-2 | To prepare evaluation report of the bridges repair works with RID | Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-7-3 | To supervise "3.7.1-2 activities" and review the result with RID | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-8 | To revise the road and bridge repair manual incorporating lessons learned from the above activities by organizing review workshop by organizing review workshop | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-8-1 | To draft revise version of road repair manual with RID | Mizota / Nakajima / Heima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-8-2 | To draft revise version of bridge repair manual with RID | Mizota / Nakajima / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-8-3 | To supervise "3.8.1-2 activities" and review the result with RID for finalize revised repair manual | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Output-4. Road and bridge maintenance cycle is introduced to other DPWTs and concerning agencies.** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-1 | To organize seminars for other DPWTs – trainings on road and bridge inspection | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-1-1 | To prepare seminars and materials for the seminars and explain their part at workshops with RID | Mizota / Nakajima / Yumita | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-1-2 | To organize the seminars and review the result with RID | Ogawa / Mizota / Yumita | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-2 | To organize seminars for other DPWTs – trainings on road and bridge Repair | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-2-1 | To prepare seminars and materials for the seminars and explain their part at workshops with RID | Mizota / Nakajima / Yumita | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-2-2 | To organize the seminars and review the result with RID | Ogawa/Mizota/ Nakajima/Yumita | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-3 | To organize the project wrap-up seminar for other DPWTs by RID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-3-1 | To organize the project wrap-up seminar for other DPWTs | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Monitoring Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kick-off Meeting | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Kick-off Meeting | | Plan | ▲ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | ▲22 May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Joint Coordinating Committee | | Plan | | | | ▲ | | | | | | ▲ | | | | | | ▲ | | | | | | ▲ | | | | | | ▲ | | | | | | ▲ | | | | | | |
| | | | Actual | | | | ▲10 July | | | | | | ▲18 January | | | | | | ▲(10 January) | | | | | | | | | | | | | | | | | | | | | | | | |
| | Revision of PDM from Version zero to one. | | Plan | | ▲ | | | | | | | | | | ▲ | | | | | | | | | | | | | | ▲ | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Submission of Monitoring Sheet | | Plan | | | | ▲ | | | | | | ▲ | | | | | | ▲ | | | | | | | | | | ▲ | | | | | | ▲ | | | | | | | | |
| | | | Actual | | | | ▲10 July | | | | | | ▲12 February | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Reports/Documents | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Final Report | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ▲ | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Evaluation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Terminal Evaluation | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ▲ | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

# Attachment 1 Purchased Equipment and Materials

Equipment

| Item | No. of Items | Year/Month | Storage Site | Status |
|---|---|---|---|---|
| DRIMS | 1 | 2015 April | JICA team office, MPWT | Accompanied by JICA team |
| Binocular | 5 | 2015 August | RID office*1 | Donated |
| MacBook Pro（laptop PC） | 1 | 2015 October | RID office | Donated |
| DELL Inspiron 15 5000series（laptop PC） | 1 | 2015 October | RID office | Donated |
| FileMaker Sever (software) | 1 | 2015 October | RID office | Donated |
| FileMaker Pro (software) | 1 | 2015 October | RID office | Donated |
| Inspection hammer | 10 | 2015 October | RID office | Donated |
| Waist pouch for inspection equipment | 10 | 2015 October | RID office | Donated |
| Flashlight | 10 | 2015 October | RID office | Donated |

Construction materials for pilot project for road/bridge repair works

| Item | No. of Items | Year/Month | Storage Site | Remains |
|---|---|---|---|---|
| BOND E206 (BASE) | 15 | 2016 January | RID lab*2 | 12.3 |
| BOND E 206 (HARDENER) | 15 | 2016 January | RID lab | 12.3 |
| BOND E390 (BASE) | 15 | 2016 January | RID lab | 13.3 |
| BOND E 390 (HARDENER) | 15 | 2016 January | RID lab | 13.3 |
| CYLINDER FOR BOND | 12 (box) | 2016 January | RID lab | 10.6 (box) |
| WEIGHTING MACHINE | 1 | 2016 January | RID lab | 1 |
| WIRE BRUSH | 6 | 2016 January | RID lab | 6 |
| SPATURA FOR MIXING | 3 | 2016 January | RID lab | 3 |
| CHALK | 1 (box) | 2016 January | RID lab | 0.5 (box) |
| BUCKET | 6 | 2016 January | RID lab | 6 |
| STOP WATCH | 3 | 2016 January | RID lab | 3 |
| SPATURA FOR PAINT | 3 | 2016 January | RID lab | 3 |
| MEASURE CUP | 6 | 2016 January | RID lab | 6 |
| SANDPAPER | 6 | 2016 January | RID lab | 6 |
| BLOWER | 3 | 2016 January | RID lab | 3 |
| LEATHER SKIVING CUTTER | 6 | 2016 January | RID lab | 6 |
| Permanent Cold Patch Asphalt | 100 | 2016 January | RID lab | 5 |

*1: MPWT main office building, 3rd floor

*2: Bridge unit warehouse in RID laboratory

## TO CR of JICA CAMBODIA OFFICE

### PROJECT MONITORING SHEET

**Project Title : The Project for Strengthening Capacity for Maintenance of Roads and Bridges**

**Version of the Sheet: Ver.4 (December 2016)**

**Name: Yuzo MIZOTA**

**Title: Team Leader**

**Submission Date: 20 December 2016**

# I. Summary

## 1 Progress

### 1-1 Progress of Inputs

| Inputs | Plan as of April 2015 | Actual as of December 2016 |
|---|---|---|
| Experts | **85.17MM**<br>1 Long term expert (chief advisor)<br>2 Short term expert (1.team leader /bridge maintenance engineer, 2.deputy- team leader/bridge repair engineer, 3. bridge inspection engineer, 4.bridge repair engineer (1), 5. bridge repair engineer (2), 6. bridge maintenance planner, 7. road maintenance engineer (1), 8. road maintenance engineer (2), 9.coordinator/assistant for road and bridge inspection, 10. Coordinator for other relevant project/C/P training supervision | **55.58MM (60.0 %: rate of latest total MM, 92.67 MM)**<br>1 Long term expert (chief advisor)<br>2 Short term expert (1.team leader /bridge maintenance engineer, 2.deputy-team leader/bridge repair engineer, 3. bridge inspection engineer, 4.bridge repair engineer (1), 5. bridge repair engineer (2), 6. bridge maintenance planner, 7. road maintenance engineer (1) /Equipment procurement engineer, 8. road maintenance engineer (2), 9.coordinator/assistant for road and bridge inspection, 10. Coordinator for other relevant project/C/P training supervision, 11. road maintenance engineer (3) (overloading control) |
| Trainees Received | Provision of training in Cambodia and in Japan or other countries | 1st training in Japan (Oct.13-24 2015, 7 trainees)<br>2nd training in Japan (Oct.30-Nov.12 2016, 7 trainees) |
| Equipment | Equipment for bridge and road maintenance | Attachment-1 |
| Others | N/A | N/A |
| Cambodia side Operational Expenses | - Arrangement of counterpart personnel<br>- Implementation cost for pilot repair works<br>- Travel expenses and allowances for participants of the seminars and trainings organized as the project activities<br>- Maintenance cost of the JICA | - Arrangement of counterpart personnel<br>- Implementation cost for pilot repair works<br>- Travel expenses and allowances for participants of the seminars and trainings organized as the project activities<br>- Maintenance cost of the JICA |

| | | |
|---|---|---|
| | project equipment<br>- Office space including its utility cost | project equipment<br>- Office space including its utility cost |

## 1-2 Progress of Activities

**Progress of activities is indicated in Monitoring Sheet Form 3-2 (PDM) and Form 3-3 (PO).**

## 1-3 Achievement of Output

| Output/Indicators | Achievement (%) | | Major Results | Status<br>OT: On Time<br>SFT: Scheduled for later<br>DL: Delay |
|---|---|---|---|---|
| | Plan | Actual | | |
| **Output-1: The bridge maintenance cycle is established.** | | | | |
| 1) The annual action plan for bridge maintenance cycle is developed by August every year for each targeted DPWT. | 60 | 90 | All of the nationwide bridges, totally 2,355 bridges, have been inspected, while review on inspection results of 173 bridges is required. | OT |
| | | 60 | Annual action plan for bridge maintenance cycle was drafted through the activities for budgeting of FY 2017 to MEF using the 3-year nationwide maintenance plan (Chapter 21 and Chapter 61) | OT |
| 2) At least 5 officials of RID engineers pass exam of bridge maintenance cycle | 80 | 100 | Seventeen (17) RID officials completed Maintenance Expert (ME) program required by Japanese experts. | OT |
| 3) The annual bridge maintenance budget is drafted at the target DPWTs of 2nd year and 3rd year by May every year. | 80 | 80 | For budget request of FY 2017, following activities are the major:<br>1. Budget request for "bridge" for Chapter 61 routine maintenance and Chapter 21 Investment<br>2. 3-year bridge maintenance plan<br>3. Road routine maintenance for measurement of IRI | OT |
| 4) 3 year bridge maintenance strategic plan of short term is prepared by RID/MPWT every August | 80 | 80 | A nationwide 3-year maintenance plan was drafted.<br>The maintenance priority list was developed accordingly. | OT |
| **Output-2: Road and bridge inspection capacity of RID is enhanced.** | | | | |
| 1) The road and bridge maintenance manuals are drafted by August 2015 and finalized by June | 80 | 80 | The road and bridge maintenance manuals are drafted. Khmer versions are being prepared. | OT |

| | | | | |
|---|---|---|---|---|
| 2017. | | | | |
| 2) The selected bridges of all DPWTs are inspected according to the maintenance manual. | 70 | 100 | The selected bridges of all DPWTs were inspected according to the maintenance manual. | OT |
| | | 70 | A pilot project for overloading control at Tsubasa Bridge has been conducted from September 2016 to August 2017. | OT |
| 3) The selected roads in the targeted DPWTs are inspected according to the maintenance manual | 50 | 50 | 1-digit roads throughout the nation and the selected roads in Kandal and Takeo province were successfully inspected by IRI-based inspection method according to the maintenance manual. | OT |
| 4) The inspection results are registered to the road and bridge database by RID until November every year. | 80 | 80 | Database was created and installed in RID office. All the inspection results have been registered in the database. | OT |
| 5) At least 5 officials of RID's engineers pass road and bridge inspection test. | 80 | 80 | Two (2) RID officials have passed road ME training program.<br>Seventeen (17) RID officials have passed bridge ME training program. | OT |
| **Output-3. Road and bridge repair capacity of RID is enhanced.** | | | | |
| 1) The road and bridge repair manuals are drafted by January 2016 and finalized by June 2017. | 80 | 80 | The road and bridge repair manuals are drafted. Khmer versions are being prepared. | OT |
| 2) The identified roads and bridges in the targeted DPWTs are repaired according to the repair manuals and the inspection results. | 50 | 50 | The 1st pilot project for road repair work has been implemented for selected roads in Kandal province.<br>3 bridges from Kandal province and 2 bridges from Phnom Penh were repaired by crack sealing method through the 1st pilot project. | OT |
| 3) The repair results are registered to the road and bridge database by RID within 1 month after the completion of repair works. | 40 | 40 | Repair results of the 1st pilot project are registered in the database system.<br>The form of the repair result is prepared. | OT |
| 4) At least 5 officials of RID's engineers pass road and bridge repair test. | 80 | 80 | Three (3) RID officials completed road ME training program, and five (5) RID officials completed bridge Maintenance Expert (ME) training program, instructed by Japanese experts. | OT |
| **Output-4. Road and bridge maintenance cycle is introduced to other DPWTs and concerning agencies** | | | | |
| 1) Bridge inspection is carried out at the more than 80% DPWTs (20/25 | 80 | 100 | Bridge inspection was conducted in all the DPWTs. | OT |

<table>
<tr><td>DPWTs).</td><td></td><td></td><td></td><td></td></tr>
<tr><td>2) More than 80% DPWTs attends the seminar held in the Project.</td><td>50</td><td>50</td><td>Twelve (12) DPWTs attended the series of seminars.<br>Attendance Rate:
<table>
<tr><td></td><td>1st</td><td>2nd</td><td>3rd</td><td>4th</td><td>5th</td><td>6th</td><td>TJ1</td><td>SIP 1</td><td>SIP 2</td></tr>
<tr><td>RID</td><td>18</td><td>14</td><td>11</td><td>6</td><td>9</td><td>12</td><td>2</td><td>17</td><td>2</td></tr>
<tr><td>DPWT</td><td>-</td><td>0</td><td>-</td><td>0</td><td>43</td><td>8</td><td>4</td><td>61</td><td>20</td></tr>
<tr><td>ITC</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>327</td><td></td></tr>
<tr><td>Other</td><td>13</td><td>9</td><td>11</td><td>0</td><td>9</td><td>11</td><td>1</td><td>69</td><td>35</td></tr>
<tr><td>Total</td><td>31</td><td>23</td><td>22</td><td>6</td><td>61</td><td>31</td><td>7</td><td>474</td><td>57</td></tr>
</table>
<table>
<tr><td></td><td>7th</td><td>DB</td><td>DB</td><td>PA</td><td>ME</td><td>OC</td><td>T.J2</td><td>OC</td><td>DB</td></tr>
<tr><td>RID</td><td>6</td><td>4</td><td>3</td><td>9</td><td>3</td><td></td><td>4</td><td></td><td>16</td></tr>
<tr><td>DPWT</td><td>2</td><td></td><td></td><td></td><td></td><td></td><td>1</td><td></td><td></td></tr>
<tr><td>Other</td><td>7</td><td></td><td></td><td>4</td><td>1</td><td>9</td><td>2</td><td>11</td><td>12</td></tr>
<tr><td>Total</td><td>15</td><td>4</td><td>3</td><td>13</td><td>4</td><td>9</td><td>7</td><td>11</td><td>28</td></tr>
</table>
DB: Database, Project Achievement, ME: Maintenance Expoert<br>OC: Overloading Control, TJ: Training in Japan<br>TJ: Training in Japan<br><br>Attendance of DPWTs: 48% (12 out of 25 DPWTS)</td><td>OT</td></tr>
<tr><td>3) The project activities are disseminated to other agencies concerning road/bridge maintenance. (number is not specified but with increments through the project)</td><td>50</td><td>50</td><td>Kickoff Seminar on 22 May 2015: MPWT, DPWTs, MEF, WB, ADB<br>SIP seminar in March 2016: road and bridge maintenance jointly held with ITC<br>Coordination of bridge database utilization with university (ITC)<br>Participation of database training from HEC, RMC and SPEAD<br>Bridge inspection jointly with ITC</td><td>OT</td></tr>
</table>

## 1-4 Achievement of the Project Purpose

| Project Purpose/Indicators | Achievement (%) | Situation | Expected Time of achievement |
|---|---|---|---|
| Project Purpose: Capacity of RID to supervise implementing bodies maintaining roads and bridges is enhanced. | | | |
| 1) Inspection results done by the three target DPWTs are approved by RID based on the manuals by the end of the Project. | 60 | [Road] 1-digit roads throughout the nation and the selected roads in Kandal and Takeo province were successfully inspected by IRI-based inspection.<br>[Bridge] Inspection of all the bridges in Cambodia has been completed in December 2015. | OT |
| 2) Repair results done by the two target | 60 | [Road] The 1st pilot project for road repair work has been implemented for selected | OT |

| | | | |
|---|---|---|---|
| DPWTs are approved by RID based on the manuals by the end of the Project | | roads in Kandal province.<br>[Bridge] 3 bridges from Kandal DPWT and 2 bridges from Phnom Penh DPWT were repaired by crack sealing method under the 1st pilot project. | |
| 3) The above two target DPWTs prepare a draft budget for roads and bridge maintenance for FY 2018 respectively within pre-agreed schedule. | 60 | [Road] The road condition evaluated by IRI is used for the FY 2017 budget request to MEF.<br>[Bridge] Budget for bridge maintenance was proposed for FY 2017 to MEF using the 3-year maintenance plan (Chapter 21 and Chapter 61) | OT |
| 4) Road and bridge maintenance cycle is explained and shared to concerning offices and units at the project wrap-up seminar. | 60 | Training for ME (Maintenance Experts on Road and Bridges) program was conducted for understanding road and bridge maintenance cycle. | OT |
| 5) Maintenance budget of road and bridge is prepared by RID according to the road and bridge maintenance cycle | 60 | [Road] The road condition evaluated by IRI is used for the FY 2017 budget request to MEF through ME program for understanding maintenance cycle.<br>[Bridge] Budget for bridge maintenance was proposed for FY 2017 to MEF using the 3-year maintenance plan through ME program for understanding maintenance cycle. | OT |

## 1-5 Achievement of the Overall Goal

| Overall Goal/Indicators | Achievement (%) | Situation | Expected Time of achievement |
|---|---|---|---|
| Overall Goal: Appropriate maintenance of roads and bridges is managed by MPWT. | | | |
| 1) The road and bridge database is updated once a year. | 60 | Prototype database covering all the bridges and selected roads on the nationwide road network was developed and installed in RID office. | OT |
| 2) Road and bridge maintenance plans are updated once a year based on the result of the road and bridge database updated | 60 | 3-year bridge maintenance plan and the selected roads maintenance plan for FY2017 were drafted based on developed database. | OT |
| 3) Road and bridge maintenance is carried out based on the road and bridge maintenance plan and the maintenance and | 30 | Road and bridge maintenance will be conducted based on the 3-year bridge maintenance plan and the road maintenance plan for the FY 2017 under supervision of RID | OT |

| | | | |
|---|---|---|---|
| repair manuals, under supervision of RID. | | | |
| 4) The road maintenance and repair manuals, and the bridge maintenance and repair manuals are regularly reviewed | 30 | [Road] Khmer version of road repair manual was completed.<br>[Bridge] Khmer version of bridge inspection and repair manual is under preparation. | OT |

**1-6 Changes of Risks and Actions for Mitigation**

**1) Activity 2-8: Overloading control**

A pilot project for overloading control has been prepared on schedule.

**2) Equipment for bridge inspection tools**

Special equipment for close bridge inspection has been procured. The appropriate utilization of the equipment has to be monitored for sustainability by JICA experts.

**3) Equipment for road inspection tools**

An additional DRIMS set has been procured. The appropriate utilization of the equipment has to be monitored for sustainability by JICA experts.

**4) Facilitate Maintenance Expert (ME) training program**

Participation for the ME training program should be encouraged by management level of MPWT.

**1-7 Progress of Actions undertaken by JICA**

**N/A**

**1-8 Progress of Actions undertaken by Gov. of Cambodia**

**N/A**

**1-9 Progress of Environmental and Social Considerations (if applicable)**

**N/A**

**1-10 Progress of Considerations on Gender/Peace Building/Poverty Reduction (if applicable)**

**N/A**

**1-11 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)**

In regard to IRI measurement for road maintenance, Road Infrastructure Department (RID) will clarify the application range of two (2) types of IRI-measurement equipment, DRIMS and ROMDAS. As of December 2016, the application range is defined as shown in the following table.

| Implementation Stage | Road Digit Class | ROMDAS | DRIMS |
|---|---|---|---|
| Short Term (The next 3 years) | 1&2 | Planning | Planning |
| | 3&4 | N/A | Routine maintenance |
| | City Roads | N/A | |
| Mid Term (3 – 10 years) | 1&2 | Planning<br>Routine Maintenance | (Routine maintenance) |
| | 3&4 | N/A | Planning |
| | City Roads | N/A | Routine maintenance |

**Organizational arrangement: One office will be responsible for both RONDAS and DRIMS operation , data analysis and data use.**

## 2 Delay of Work Schedule and/or Problems (if any)

### 2-1 Detail

#### 1) Activity 2-8: Overloading control

A pilot project for overloading control has been prepared on schedule.

### 2-2 Cause

**N/A**

### 2-3 Action to be taken

Progress of the pilot project has to be monitored for smooth implementation of the project.

### 2-4 Roles of Responsible Persons/Organizations (JICA, Gov. of Cambodia, etc.)

**N/A**

## 3 Modification of the Project Implementation Plan

### 3-1 PO

PO of the project is prepared. It is attached as Monitoring Sheet Form 3-3.

### 3-2 Other modifications on detailed implementation plan

***(Remarks: The amendment of R/D and PDM (title of the project, duration, project site(s), target group(s), implementation structure, overall goal, project purpose, outputs, activities, and input) should be authorized by JICA HDQs. If the project team deems it necessary to modify any part of R/D and PDM, the team may propose the draft.)***

**PDM revised from Ver.2 to Ver.3 is attached as Monitoring Sheet Form 3-2.**

**PM Form 3-2 (1) Monitoring Sheet I (PDM Ver.2)**

**PM Form 3-2 (2) Monitoring Sheet I (PDM Ver.3)**

## 4 Measures undertaken by Gov. of Cambodia or Project Team to Ensure the Sustainability of Project after the Project Completion

### 4-1 Financial Sustainability

"The 3-year bridge maintenance strategic plan" has been drafted based on information stored in the bridge database developed in the project. The plan has been already submitted to MEF (Ministry of Economic and Finance) as the budget request and negotiations have been taken between MPWT and MEF for its approval.

### 4-2 Technical Sustainability

All the technologies transferred in the project have to be continued as the part of the project activities, assisted by the JICA expert team. The technical sustainability has to be appropriately monitored by the JICA expert team.

### 4-3 Institutional Sustainability

The project has proposed to create a regulation related to the Maintenance Experts (MEs). This is to specify tasks and responsibilities of the MEs and expected to encourage increase of the number of MEs.

## II. Project Monitoring Sheet I & II *as Attached*

# Project Monitoring Sheet I (Revision of Project Design Matrix)

Version 2

Dated January 2016

**Project Title:** The Project for Strengthening Capacity for Maintenance of Roads and Bridges
**Implementation Agency:** Road Infrastructure Department of Ministry of Public Work and Transport (RID MPWT)
**Target Groups:** Engineers of RID
**Period of Project:** April 2015 – March 2018
**Project Site:** Cambodia
**Target Area:** Roads and Bridges under MPWT

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| **Overall Goal**<br>Appropriate maintenance of roads and bridges is managed by MPWT. | 1. The road and bridge database is updated once / a year.<br>2. Road and bridge maintenance plans are updated once / a year base on the result of the road and bridge database updated.<br>3. Road and bridge maintenance is carried out based on the road and bridge maintenance plan and the maintenance and repair manuals, under supervision of RID.<br>4. The road maintenance and repair manuals, and the bridge maintenance and repair manuals are regularly reviewed. | 1. Log record of the database, random sample check of individual data<br>2. The maintenance plans, corresponding data from the database<br>3. The maintenance record, the maintenance plans and manuals<br>4. Minutes of the review meeting | - Country's socio-political situation does not change rapidly. | | |
| **Project Purpose**<br>Capacity of RID to supervise implementing bodies maintaining roads and bridges is enhanced. | 1. Inspection results done by the three target DPWTs are approved by RID based on the manuals by the end of the Project.<br>2. Repair results done by the two target DPWTs are approved by RID base on the manuals by the end of the Project.<br>3. The above two target DPWTs prepare | 1. DPWT inspection reports and on-site confirmation by RID<br>2. DPWT repair reports and on-site confirmation by RID.<br>3. The said draft budget and its submission date | - Organizational arrangement of MPWT is not changed drastically. | | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| | a draft budget for roads and bridge maintenance for FY 2018 respectively within pre-agreed schedule.<br>4. Road and bridge maintenance cycle is explained and shared to concerning offices and units at the project wrap-up seminar.<br>5. Maintenance budget of road and bridge is prepared by RID according to the road and bridge maintenance cycle | 4. Number and name of the participated offices and unit<br>5. Interest level of the participants through the questionnaire. | | | |
| **Outputs**<br>1. The bridge maintenance cycle is established. | 1-1. The annual action plan for bridge maintenance cycle is developed and approved by August every year for each targeted DPWT.<br>1-2. At least 5 officials of RID engineers pass exam of bridge maintenance cycle.<br>1-3. The annual bridge maintenance budget is drafted at the target DPWTs of 2nd year and 3rd year by May every year.<br>1-4. 3 Year Bridge Maintenance Strategic Plan of short term is prepared by RID/MPWT every August | 1-1. The annual action plan and it's date developed and approved<br>1-2. The exam results and participants list<br>1-3. The drafted budget and its date<br>1-4. 3 Year Bridge Maintenance Strategic Plan | - The trained staff/officers remain at the job.<br>- Roles of DPWTs and other concerning offices and units are not changed including budget preparation system. | | |
| 2. Road and bridge inspection capacity of RID is enhanced. | 2-1. The road and bridge maintenance manuals are drafted by August 2015 and finalized by June 2017.<br>2-2. The selected bridges of all DPWTs are inspected according to the maintenance manual.<br>2-3. The selected roads in the targeted DPWTs are inspected according to the maintenance manual<br>2-4. The inspection results are registered | 2-1. The manuals and its' date prepared<br>2-2. Inspection record and sample on-site confirmation<br>2-3. Inspection record and corresponding data for sample check<br>2-4. The test results and participants list | | | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| | to the road and bridge database by RID until November every year.<br>2-5. At least 5 officials of RID's engineers pass road and bridge inspection test. | | | | |
| 3. Road and bridge repair capacity of RID is enhanced. | 3-1. The road and bridge repair manuals are drafted by January 2016 and finalized by June 2017.<br>3-2. The identified roads and bridges in the targeted DPWTs are repaired according to the repair manuals and the inspection results.<br>3-3. The repair results are registered to the road and bridge database by RID within 1 month after the completion of repair works.<br>3-4. At least 5 officials of RID's engineers pass road and bridge repair test. | 3-1. The manuals and its' date prepared<br>3-2. Repair record and sample on-site confirmation<br>3-3. Repair record and corresponding data for sample check<br>3-4. The test results and participants list | | | |
| 4. Road and bridge maintenance cycle is introduced to other DPWTs and concerning agencies. | 4-1. Bridge inspection is carried out at the more than 80% DPWTs (20/25 DPWTs).<br>4-2. More than 80% DPWTs attends the seminar held in the Project.<br>4-3. The project activities are disseminated to other agencies concerning road/bridge maintenance. (number is not specified but with increments through the project) | 4-1. Bridge inventory data<br>4-2. The participants list<br>4-3. Publicity matter | | | |

| **Activities** | **Inputs** | | |
|---|---|---|---|
| 1-1. To review the present bridge maintenance cycle and the works of RID in comparison to the existing Japanese system<br>1-2. To propose 3 year bridge maintenance strategic plan with the annual action plan to establish a proper bridge maintenance cycle<br>1-3. To propose annual action plan for bridge maintenance cycle to establish a proper bridge maintenance cycle based on the review results<br>1-4. To practice the action plan<br>1-5. To hold workshop of the bridge maintenance cycle<br>1-6. To prepare draft annual bridge maintenance budget<br><br>2-1. To review and develop road maintenance manual<br>2-2. To review and develop bridge maintenance manual, including a database frame<br>2-3. To hold training workshops on road and bridge inspections<br>2-4. For bridge, to inspect bridges and prepare rough cost estimation of the repair works for all DPWTs<br>2-5. For roads, to inspect roads using IRI and prepare rough cost estimation of the repair works at the target DPWTs<br>2-6.To register the inspection results in the database by RID<br>2-7. To revise the road and bridge maintenance manuals incorporating lessons learned from the above activities by organizing review workshops<br>2-8. To conduct preliminary study on overloading control (at Tsubasa Bridge)<br><br>3-1. To review and establish road repair manual<br>3-2. To review and establish bridge repair manual<br>3-3. To hold training workshops on road and bridge repairs<br>3-4. To identify roads and bridges for the pilot repair works based on the inspection results at the target DPWTs<br>3-5. To establish repair plan for the identified roads and bridges | (Japan side)<br>1. A chief advisor / A long term expert<br><br>2. Short term experts<br>1) Team Leader / Bridge Maintenance Engineer<br>2) Deputy-team leader / Road Maintenance Planner<br>3) Bridge Inspection Engineer<br>4) Bridge Repair Engineer (1) (Planning and Design)<br>5) Bridge Repair Engineer (2) (Repairing work Expert)<br>6) Bridge Maintenance Planner<br>7) Road Maintenance Engineer(1)<br>8) Road Maintenance Engineer(2)<br>9) Coordinator / Assistant for Road and Bridge Inspection<br>10) Coordinator for other relevant project / C/P training Supervision<br>11) Road Maintenance Engineer (3) (Overloading Control)<br><br>3. Equipment for road and bridge maintenance<br><br>4. C/P training<br><br>5. Cost for seminars and Trainings as the project activities | (Cambodia side)<br>1. Arrangement of counterpart personnel<br>1) Project Director<br>2) Project Manager<br>3) Other Necessary Personnel<br><br>2. Implementation cost for the pilot repair works<br><br>3. Travel expenses and allowances for the participants of the seminars and trainings organized as the project activities<br><br>4. Maintenance cost of the JICA project equipment<br><br>5. Office space including its utility cost (electricity, water, internet and other necessary office facilities)<br><br>6. Etc. | - Conditions of roads and bridges under MPWT are not rapidly deteriorated.<br>- Flood with large scale is not occurred annually.<br><br>Pre-condition<br>N/A |

| | | | |
|---|---|---|---|
| at the target DPWTs<br>3-6. To repair the identified roads and bridges at the target DPWTs<br>3-7. To evaluate the above repair works<br>3-8. To revise the road and bridge repair manual incorporating lessons learned from the above activities by organizing review workshop by organizing review workshop<br><br>4-1. To organize seminars for other DPWTs – trainings on road and bridge inspection<br>4-2. To organize seminars for other DPWTs – trainings on road and bridge repair<br>4-3. To organize the project wrap-up seminar | | | |

# Project Monitoring Sheet I (Revision of Project Design Matrix)

Version 3

Dated December 2016

**Project Title:** The Project for Strengthening Capacity for Maintenance of Roads and Bridges
**Implementation Agency:** Road Infrastructure Department of Ministry of Public Work and Transport (RID MPWT)
**Target Groups:** Engineers of RID
**Period of Project:** April 2015 – March 2018
**Project Site:** Cambodia
**Target Area:** Roads and Bridges under MPWT

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| **Overall Goal**<br>Appropriate maintenance of roads and bridges is managed by MPWT. | 1. The road and bridge database is updated once / a year.<br><br>2. Road and bridge maintenance plans are updated once / a year base on the result of the road and bridge database updated.<br><br>3. Road and bridge maintenance is carried out based on the road and bridge maintenance plan and the maintenance and repair manuals, under supervision of RID.<br><br>4. The road maintenance and repair manuals, and the bridge maintenance and repair manuals are regularly reviewed. | 1. Log record of the database, random sample check of individual data<br>2. The maintenance plans, corresponding data from the database<br>3. The maintenance record, the maintenance plans and manuals<br>4. Minutes of the review meeting | - Country's socio-political situation does not change rapidly. | Prototype bridge database which covered all the bridges on national roads was developed and installed in RID office.<br><br>3-year bridge maintenance plan and the maintenance budget for FY2017 were drafted based on developed database.<br><br>3-year bridge maintenance plan and the annual maintenance budget will be updated by RID.<br><br>[Road] Khmer version of road repair manual was completed.<br>[Bridge] Khmer version of bridge inspection and repair | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| | | | | manual is under preparation. | |
| **Project Purpose**<br>Capacity of RID to supervise implementing bodies maintaining roads and bridges is enhanced. | 1. Inspection results done by the three target DPWTs are approved by RID based on the manuals by the end of the Project.<br>2. Repair results done by the two target DPWTs are approved by RID base on the manuals by the end of the Project.<br>3. The above two target DPWTs prepare a draft budget for roads and bridge maintenance for FY 2018 respectively within pre-agreed schedule. | 1. DPWT inspection reports and on-site confirmation by RID<br>2. DPWT repair reports and on-site confirmation by RID.<br>3. The said draft budget and its submission date<br>4. Number and name of the participated offices and unit<br>5. Interest level of the participants through the questionnaire. | - Organizational arrangement of MPWT is not changed drastically. | [Road] 1-digit roads throughout the nation and the selected roads in Kandal and Takeo province were successfully inspected by IRI-based inspection.<br>[Bridge] Inspection of all the bridges in Cambodia has been completed in December 2015.<br><br>[Road] The 1st pilot project for road repair work has been implemented for selected roads in Kandal province.<br>[Bridge] 3 bridges from Kandal DPWT and 2 bridges from Phnom Penh DPWT were repaired by crack sealing method under the 1st pilot project.<br><br>[Road] The road condition evaluated by IRI is used for the FY 2017 budget request to MEF.<br>[Bridge] Budget for bridge maintenance was proposed for FY 2017 to MEF using the | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| | 4. Road and bridge maintenance cycle is explained and shared to concerning offices and units at the project wrap-up seminar.<br><br>5. Maintenance budget of road and bridge is prepared by RID according to the road and bridge maintenance cycle | | | 3-year maintenance plan (Chapter 21 and Chapter 61)<br><br>Training for ME (Maintenance Experts on Road and Bridges) program was conducted for understanding road and bridge maintenance cycle.<br><br>[Road] The road condition evaluated by IRI is used for the FY 2017 budget request to MEF through ME program for understanding maintenance cycle.<br>[Bridge] Budget for bridge maintenance was proposed for FY 2017 to MEF using the 3-year maintenance plan through ME program for understanding maintenance cycle. | |
| **<u>Outputs</u>**<br>1. The bridge maintenance cycle is established. | 1-1. The annual action plan for bridge maintenance cycle is developed and approved by August every year for each targeted DPWT. | 1-1. The annual action plan and it's date developed and approved<br>1-2. The exam results and participants list<br>1-3. The drafted budget and its date<br>1-4. 3 Year Bridge Maintenance Strategic | - The trained staff/officers remain at the job.<br>- Roles of DPWTs and other concerning offices and units are not changed including budget preparation | Annual action plan for bridge maintenance cycle was drafted through the activities for budgeting of FY 2017 to MEF using the 3-year nationwide maintenance plan (Chapter 21 and | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| | | Plan | system. | Chapter 61)<br>Annual action plan (draft) for bridge maintenance was prepared through a drafted 3-year bridge maintenance plan while a detailed action plan should be prepared for targeted DPWTs. | |
| | 1-2. At least 5 officials of RID engineers pass exam of bridge maintenance cycle. | | | Seventeen (17) RID officials completed Maintenance Expert (ME) program required by Japanese experts. | |
| | 1-3. The annual bridge maintenance budget is drafted at the target DPWTs of 2nd year and 3rd year by May every year. | | | For budget request of FY 2017, following supports are the major:<br>1. Budget request for "bridge" for Chapter 61 routine maintenance and Chapter 21 Investment<br>2. 3-year bridge maintenance plan<br>3. Road routine maintenance for measurement of IRI | |
| | 1-4. 3 Year Bridge Maintenance Strategic Plan of short term is prepared by RID/MPWT every August | | | A nationwide 3-year maintenance plan was drafted.<br>The maintenance priority list was developed accordingly. | |
| 2. Road and bridge inspection capacity of RID is enhanced. | 2-1. The road and bridge maintenance manuals are drafted by August 2015 | 2-1. The manuals and its' date prepared | | The road and bridge maintenance manuals | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| | and finalized by June 2017.<br><br>2-2. The selected bridges of all DPWTs are inspected according to the maintenance manual.<br><br>2-3. The selected roads in the targeted DPWTs are inspected according to the maintenance manual<br><br>2-4. The inspection results are registered to the road and bridge database by RID until November every year.<br><br>2-5. At least 5 officials of RID's engineers pass road and bridge inspection test. | 2-2. Inspection record and sample on-site confirmation<br>2-3. Inspection record and corresponding data for sample check<br>2-4. The test results and participants list | | are drafted. Khmer versions are being prepared.<br><br>The selected bridges of all DPWTs were inspected according to the maintenance manual.<br>A pilot project for overloading control at Tsubasa Bridge started behind the proposed schedule of preliminary study.<br><br>1-digit roads throughout the nation and the selected roads in Kandal and Takeo province were successfully inspected by IRI-based inspection method according to the maintenance manual.<br><br>Database was created and installed in RID office.<br>All the inspection results have been registered in the database.<br><br>Two (2) RID officials have passed road ME training program.<br>Seventeen (17) RID officials have passed | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| | | | | bridge ME training program. | |
| 3. Road and bridge repair capacity of RID is enhanced. | 3-1. The road and bridge repair manuals are drafted by January 2016 and finalized by June 2017.<br><br>3-2. The identified roads and bridges in the targeted DPWTs are repaired according to the repair manuals and the inspection results.<br><br>3-3. The repair results are registered to the road and bridge database by RID within 1 month after the completion of repair works.<br><br>3-4. At least 5 officials of RID's engineers pass road and bridge repair test. | 3-1. The manuals and its' date prepared<br>3-2. Repair record and sample on-site confirmation<br>3-3. Repair record and corresponding data for sample check<br>3-4. The test results and participants list | | The road and bridge repair manuals are drafted. Khmer versions are being prepared.<br><br>The 1st pilot project for road repair work has been implemented for selected roads in Kandal province.<br>3 bridges from Kandal province and 2 bridges from Phnom Penh were repaired by crack sealing method through the 1st pilot project.<br><br>Repair results of the 1st pilot project are registered in the database system.<br>The form of the repair result is prepared.<br><br>Three (3) RID officials completed road ME training program, and five (5) RID officials completed bridge Maintenance Expert (ME) training program, instructed by Japanese experts. | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| 4. Road and bridge maintenance cycle is introduced to other DPWTs and concerning agencies. | 4-1. Bridge inspection is carried out at the more than 80% DPWTs (20/25 DPWTs).<br><br>4-2. More than 80% DPWTs attends the seminar held in the Project.<br><br>4-3. The project activities are disseminated to other agencies concerning road/bridge maintenance. (number is not specified but with increments through the project) | 4-1. Bridge inventory data<br>4-2. The participants list<br>4-3. Publicity matter | | Bridge inspection was conducted in all the DPWTs.<br><br>Ten (10) DPWTs attended the series of seminars.<br>Attendance of DPWTs: 40% (10 out of 25 DPWTS)<br><br>Kickoff Seminar on 22 May 2015: MPWT, DPWTs, MEF, WB, ADB<br>SIP seminar in March 2016: road and bridge maintenance jointly held with ITC<br>Coordination of bridge database utilization with university (ITC)<br>Participation of database training from HEC, RMC and SPEAD<br>Bridge inspection jointly with ITC | |

| **Activities** | **Inputs** | | |
|---|---|---|---|
| 1-1. To review the present bridge maintenance cycle and the works of RID in comparison to the existing Japanese system<br>1-2. To propose 3 year bridge maintenance strategic plan with the annual action plan to establish a proper bridge maintenance cycle<br>1-3. To propose annual action plan for bridge maintenance cycle to establish a proper bridge maintenance cycle based on the review results<br>1-4. To practice the action plan<br>1-5. To hold workshop of the bridge maintenance cycle<br>1-6. To prepare draft annual bridge maintenance budget<br><br>2-1. To review and develop road maintenance manual<br>2-2. To review and develop bridge maintenance manual, including a database frame<br>2-3. To hold training workshops on road and bridge inspections<br>2-4. For bridge, to inspect bridges and prepare rough cost estimation of the repair works for all DPWTs<br>2-5. For roads, to inspect roads using IRI and prepare rough cost estimation of the repair works at the target DPWTs<br>2-6.To register the inspection results in the database by RID<br>2-7. To revise the road and bridge maintenance manuals incorporating lessons learned from the above activities by organizing review workshops<br>2-8. To conduct preliminary study on overloading control (at Tsubasa Bridge)<br><br>3-1. To review and establish road repair manual<br>3-2. To review and establish bridge repair manual<br>3-3. To hold training workshops on road and bridge repairs<br>3-4. To identify roads and bridges for the pilot repair works based on the inspection results at the target DPWTs<br>3-5. To establish repair plan for the identified roads and bridges at the target DPWTs<br>3-6. To repair the identified roads and bridges at the target DPWTs | (Japan side)<br>1. A chief advisor / A long term expert<br><br>2. Short term experts<br>1) Team Leader / Bridge Maintenance Engineer<br>2) Deputy-team leader / Road Maintenance Planner<br>3) Bridge Inspection Engineer<br>4) Bridge Repair Engineer (1) (Planning and Design)<br>5) Bridge Repair Engineer (2) (Repairing work Expert)<br>6) Bridge Maintenance Planner<br>7) Road Maintenance Engineer(1) / Equipment procurement engineer<br>8) Road Maintenance Engineer(2)<br>9) Coordinator / Assistant for Road and Bridge Inspection<br>10) Coordinator for other relevant project / C/P training Supervision<br>11) Road Maintenance Engineer (3) (Overloading Control)<br><br>3. Equipment for road and bridge maintenance<br><br>4. C/P training<br><br>5. Cost for seminars and Trainings as the project activities | (Cambodia side)<br>1. Arrangement of counterpart personnel<br>1) Project Director<br>2) Project Manager<br>3) Other Necessary Personnel<br><br>2. Implementation cost for the pilot repair works<br><br>3. Travel expenses and allowances for the participants of the seminars and trainings organized as the project activities<br><br>4. Maintenance cost of the JICA project equipment<br><br>5. Office space including its utility cost (electricity, water, internet and other necessary office facilities)<br><br>6. Etc. | - Conditions of roads and bridges under MPWT are not rapidly deteriorated.<br>- Flood with large scale is not occurred annually.<br><br>Pre-condition<br>N/A |

| | | | |
|---|---|---|---|
| 3-7. To evaluate the above repair works<br>3-8. To revise the road and bridge repair manual incorporating lessons learned from the above activities by organizing review workshop by organizing review workshop<br><br>4-1. To organize seminars for other DPWTs – trainings on road and bridge inspection<br>4-2. To organize seminars for other DPWTs – trainings on road and bridge repair<br>4-3. To organize the project wrap-up seminar | | | |

Form 3-3 Project Monitoring Sheet II (Revision of Plan of Operation)

Ver. 3

Project Title: The Project for Strengthening Capacity for Maintenance of Roads and Bridges

Dated: December, 2016

| INPUTS | Expert in charge | Plan/ Actual | 2015 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2016 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2017 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2018 1 | 2 | 3 | Remarks | Monitoring Issue | Monitoring Solution |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Expert** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chief Advisor | OGAWA Koichi | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Team Leader / Bridge Maintenance Engineer | MIZOTA Yuzo | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Deputy Team Leader / Road Maintenance Planner | NAKAJIMA Takashi | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bridge Repair Engineer (1) (Plannning and Design) | TOKUMASU Ken | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bridge Repair Engineer (2) (Repairing Work Expert) | SUZUKI Hideyuki | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bridge Inspection Engineer | TSUKAMOTO Shigeaki | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bridge Maintenance Planner | WATANABE Masatoshi | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Road Maintenance Engineer (1) | HEIMA Hiroyuki | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Road Maintenance Engineer (2) | IBAYASHI Kou | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Road Maintenance Engineer (3) | HAKAMATA Fumio | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coordinator / Assistant for Road and Bridge Inspection | OHTAKE Hiroaki | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coordinator for other Relevant Project | YUMITA Kazuo | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Equipment Procurement / Road Maintenance Engineer (1) | MAEDA Tatsuro | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Equipment** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Equipment for Pilot Project | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Training in Japan** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

P0–1

| ACTIVITIES | | Expert in charge | Plan/ Actual | 2015 | | | | | | | | | | 2016 | | | | | | | | | | 2017 | | | | | | | | | | | | 2018 | | | Responsible Organization | | Achievements | Issue & Countermeasures |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | Japan | Cambodia | | |
| Output-1: The bridge maintenance cycle is established. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-1 | To review the present bridge maintenance cycle and the works of RID in comparison to the existing Japanese system | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-1-1 | To collect existing Data and analyze them with RID | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-1-2 | To study the cases of Japanese bridge maintenance cycle that be able to apply to Cambodia | Mizota / Tokumasu / Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-1-3 | To review the result and discuss with RID | Ogawa / Tokumasu / Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-2 | To propose 3 year bridge maintenance strategic plan with the annual action plan to establish a proper bridge maintenance cycle | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-2-1 | To draft the action plan with RID | Mizota / Nakajima/ Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-2-2 | To supervise "1.2.1 activities" and review with RID for final action plan | Ogawa / Mizota / Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-3 | To practice the action plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-3-1 | To supervise the action of RID and the other organization | Mizota/Nakajima/ Tokumasu/Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-3-2 | To supervise "1.3.1 activities" and evaluate it with RID | Ogawa /Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-4 | To hold workshops of the bridge maintenance cycle | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-4-1 | To prepare workshops and materials for the workshops and explain their part at workshops with RID | Nakajima/Tokumasu/ Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-4-2 | To organize the workshops and review the result with RID | Ogawa / Mizota / Nakajima / Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-5 | To prepare draft annual bridge maintenance budget | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-5-1 | To draft the maintenance budget of target DPWT | Mizota / Nakajima / Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-5-2 | To draft the maintenance budget with RID | Mizota / Nakajima / Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-5-3 | To supervise "1.5.2 activities" and review drafts with RID | Ogawa | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |


| ACTIVITIES | Expert in charge | Plan/ Actual | 2015 | 2016 | 2017 | 2018 | Responsible Organization | Achievements | Issue & Countermeasures |
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| ACTIVITIES | | Expert in charge | Plan/ Actual | 2015 | | | | | | | | | | | | 2016 | | | | | | | | | | | | 2017 | | | | | | | | | | | | 2018 | | | Responsible Organization | | Achievements | Issue & Countermeasures |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | Japan | Cambodia | | |
| Output-2: Road and bridge inspection capacity of RID is enhanced. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-1 | To review and develop road maintenance manual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-1-1 | To review road maintenance manual with RID | Nakajima / Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-1-2 | To draft new road maintenance manual with RID | Nakajima / Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-1-3 | To supervise "2.1.1-2 activities" and review it with RID | Ogawa / Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-2 | To review and develop bridge maintenance manual, including a database framework | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-2-1 | To draft new bridge maintenance manual with RID | Tokumasu/ Tsukamoto/Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-2-2 | To supervise "2.2.1 activities" and review it with RID for finalizing bridge maintenance manual | Ogawa/Tokumasu/ Tsukamoto/Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-3 | To hold training workshops on road and bridge inspections | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-3-1 | To prepare workshops and materials for the workshops and explain their part at workshops with RID | Tokumasu/Tsukamoto/ Ohtake/Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-3-2 | To organize the workshops and review the result with RID | Ogawa/Tokumasu/ Tsukamoto/Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4 | For bridge, to inspect bridges and prepare rough cost estimation of the repair works for all DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4-1 | To prepare draft inspection plan for bridges with RID | Tokumasu/ Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4-2 | To implement bridge inspection with RID and DPWTs engineers at all the DPWTs | Tokumasu/ Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4-3 | To prepare rough cost estimation of the repair works for bridges with RID | Tokumasu/ Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4-4 | To supervise "2.4.1-3 activities" and discuss with RID | Ogawa/ Mizota/ Tokumasu/Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-5 | For roads, to inspect roads using IRI and prepare rough cost estimation of the repair works at the target DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-5-1 | To prepare draft inspection plan for roads with RID | Nakajima/ Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-5-2 | To implement road inspection with RID and DPWTs engineers at the target DPWTs | Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-5-3 | To prepare rough cost estimation of the repair works for roads with RID | Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-5-4 | To supervise "2.5.1-3 activities" and discuss with RID | Ogawa/ Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-6 | To register the inspection results in the database by RID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-6-1 | To register the inspection results of roads with RID | Nakajima/ Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-6-2 | To register the inspection results of bridges with RID | Tokumasu/Tsukamoto/ Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-6-3 | To supervise "2.6.1-2 activities" and review the result with RID | Ogawa/ Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-7 | To register the inspection results in the database by RID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-7-1 | To revise the road and bridge maintenance manual with RID | Mizota/Nakajima/ Tokumasu/Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-7-2 | To prepare workshops and materials for the workshops and explain their part at workshops with RID | Mizota/Nakajima/ Tokumasu/Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-7-3 | To organize the workshops and review the result with RID | Ogawa/Mizota / Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-8 | To conduct preliminary study on overloading control (at Tsubasa Bridge) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-8-1 | Overloading enforcement in foreign countries | Hakamada | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-8-2 | Countermeasures against overloading issue at Tsubasa Bridge | Hakamada | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| ACTIVITIES | Expert in charge | Plan/ Actual | 2015 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2016 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2017 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2018 1 | 2 | 3 | Responsible Organization Japan | Cambodia | Achievements | Issue & Countermeasures |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Output-3. Road and bridge repair capacity of RID is enhanced. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-1 To review and establish road repair manual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-1-1 To review road repair manual with RID | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-1-2 To draft new road repair manual with RID | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-1-3 To supervise "3.1.1-2 activities" and review the result with RID for finalize repair manual | Ogawa / Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-2 To review and establish bridge repair manual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-2-1 To review bridge repair manual with RID | Mizota / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-2-2 To draft new bridge repair manual with RID | Mizota / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-2-3 To supervise "3.2.1-2 activities" and review the result with RID for finalize repair manual | Ogawa / Mizota / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-3 To hold training workshops on road and bridge repairs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-3-1 To prepare workshops and materials for the workshops and explain their part at workshops with RID | Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-3-2 To organize the workshops and review the result with RID | Ogawa / Mizota / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-4 To identify roads and bridges for the pilot repair works based on the inspection results at the target DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-4-1 To prepare priority sites list of roads for the pilot repair works with RID | Mizota / Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-4-2 To prepare priority sites list of bridges for the pilot repair works with RID | Mizota / Nakajima / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-4-3 To identify roads and bridges for the pilot repair works with RID | Ogawa | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-5 To establish repair plan for the identified roads and bridges at the target DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-5-1 To draft repair plan for roads with RID | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-5-2 To draft repair plan for bridges with RID | Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-5-3 To review and finalize repair plan for the identified roads and bridges with RID | Ogawa /Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-6 To repair the identified roads and bridges at the target DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-6-1 To repair the identified roads with RID and DPWTs engineers at the target DPWTs | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-6-2 To repair the identified bridges with RID and DPWTs engineers at the target DPWTs | Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-6-3 To supervise "3.6.1-2 activities" and discuss with RID | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | ACTIVITIES | Expert in charge | Plan/ Actual | 2015 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2016 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2017 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2018 1 | 2 | 3 | Responsible Organization Japan | Cambodia | Achievements | Issue & Countermeasures |
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| 3-7 | To evaluate the above repair works | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-7-1 | To prepare evaluation report of the roads repair works with RID | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-7-2 | To prepare evaluation report of the bridges repair works with RID | Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-7-3 | To supervise "3.7.1-2 activities" and review the result with RID | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-8 | To revise the road and bridge repair manual incorporating lessons learned from the above activities by organizing review workshop by organizing review workshop | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-8-1 | To draft revise version of road repair manual with RID | Mizota / Nakajima / Heima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-8-2 | To draft revise version of bridge repair manual with RID | Mizota / Nakajima / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-8-3 | To supervise "3.8.1-2 activities" and review the result with RID for finalize revised repair manual | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | ACTIVITIES | Expert in charge | Plan/ Actual | 2015 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2016 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2017 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2018 1 | 2 | 3 | Responsible Organization Japan | Cambodia | Achievements | Issue & Countermeasures |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Output-4. Road and bridge maintenance cycle is introduced to other DPWTs and concerning agencies. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-1 | To organize seminars for other DPWTs – trainings on road and bridge inspection | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-1-1 | To prepare seminars and materials for the seminars and explain their part at workshops with RID | Mizota / Nakajima / Yumita | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-1-2 | To organize the seminars and review the result with RID | Ogawa / Mizota / Yumita | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-2 | To organize seminars for other DPWTs – trainings on road and bridge Repair | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-2-1 | To prepare seminars and materials for the seminars and explain their part at workshops with RID | Mizota / Nakajima / Yumita | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-2-2 | To organize the seminars and review the result with RID | Ogawa/Mizota/ Nakajima/Yumita | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-3 | To organize the project wrap-up seminar for other DPWTs by RID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-3-1 | To organize the project wrap-up seminar for other DPWTs | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Monitoring Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kick-off Meeting | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Kick-off Meeting | Plan | ▲ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | ▲22 May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Joint Coordinating Committee | Plan | | | | | ▲ | | | | | | ▲ | | | | | | ▲ | | | | | | ▲ | | | | | | ▲ | | | | | | ▲ | | | | | |
| | | Actual | | | | | ▲10 July | | | | | | ▲18 January | | | | | | | ▲10 August | | | | | ▲15 December | | | | | | | | | | | | | | | | | |
| | Revision of PDM from Version zero to one. | Plan | ▲ | | | | | | | | | | | ▲ | | | | | | | | | | | | | ▲ | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Submission of Monitoring Sheet | Plan | | | | | ▲ | | | | | | | ▲ | | | | | | | ▲ | | | | | | ▲ | | | | | | | ▲ | | | | | | | | |
| | | Actual | | | | | ▲10 July | | | | | | | ▲12 February | | | | | | | ▲4 August | | | | | ▲20 December | | | | | | | | | | | | | | | | |
| Reports/Documents | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Final Report | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ▲ | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Evaluation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Terminal Evaluation | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ▲ | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

# Attachment 1 Purchased Equipment and Materials

**Equipment**

| Item | No. of Items | Year/Month | Storage Site | Status |
|---|---|---|---|---|
| DRIMS | 2 | 2015 April,<br>2016 October | JICA team office,<br>MPWT | Accompanied by JICA team |
| Binocular | 5 | 2015 August | RID office*1 | Donated |
| MacBook Pro（laptop PC） | 1 | 2015 October | RID office | Donated |
| DELL Inspiron 15 5000series（laptop PC） | 1 | 2015 October | RID office | Donated |
| FileMaker Sever (software) | 1 | 2015 October | RID office | Donated |
| FileMaker Pro (software) | 1 | 2015 October | RID office | Donated |
| Inspection hammer | 10 | 2015 October | RID office | Donated |
| Waist pouch for inspection equipment | 10 | 2015 October | RID office | Donated |
| Flashlight | 10 | 2015 October | RID office | Donated |
| Portable type weighing scale | 2 | 2016 September | Tsubasa Bridge | Donated |
| Load cell (spare parts) | 1 | 2016 December | In process | To be donated |
| Container house | 1 | 2016 September | Tsubasa Bridge | Donated |
| Inspection camera | 1 | 2016 September | JICA team office | To be donated |
| Oxygen meter | 1 | 2016 September | JICA team office | To be donated |
| iPad | 10 | 2016 September | RID office | Donated |
| Laptop computer | 2 | 2016 September | RID office | Donated |
| Safety belt | 5 | 2016 September | RID office | Donated |
| Ladder | 1 | 2016 September | RID office | Donated |
| Head beam light | 2 | 2016 September | RID office | Donated |
| Head light | 5 | 2016 September | RID office | Donated |
| Transceiver | 1 | 2016 September | RID office | Donated |
| Shovel | 2 | 2016 September | RID office | Donated |
| Grass Cutter | 1 | 2016 September | RID office | Donated |
| Color cone | 5 | 2016 September | RID office | Donated |
| Vehicle stopper | 1 | 2016 September | RID office | Donated |
| Movie recorder (road monitor) | 2 | 2016 September | RID office | Donated |
| DRIMS-relevant accessary | 2 | 2016 September | RID office | Donated |

**Construction materials for pilot project for road/bridge repair works**

| Item | No. of Items | Year/Month | Storage Site | Remains |
|---|---|---|---|---|
| BOND E206 (BASE) | 15 | 2016 January | RID lab*2 | 12.3 |
| BOND E 206 (HARDENER) | 15 | 2016 January | RID lab | 12.3 |
| BOND E390 (BASE) | 15 | 2016 January | RID lab | 13.3 |
| BOND E 390 (HARDENER) | 15 | 2016 January | RID lab | 13.3 |
| CYLINDER FOR BOND | 12 (box) | 2016 January | RID lab | 10.6 (box) |
| WEIGHTING MACHINE | 1 | 2016 January | RID lab | 1 |
| WIRE BRUSH | 6 | 2016 January | RID lab | 6 |
| SPATURA FOR MIXING | 3 | 2016 January | RID lab | 3 |
| CHALK | 1 (box) | 2016 January | RID lab | 0.5 (box) |
| BUCKET | 6 | 2016 January | RID lab | 6 |
| STOP WATCH | 3 | 2016 January | RID lab | 3 |
| SPATURA FOR PAINT | 3 | 2016 January | RID lab | 3 |
| MEASURE CUP | 6 | 2016 January | RID lab | 6 |
| SANDPAPER | 6 | 2016 January | RID lab | 6 |
| BLOWER | 3 | 2016 January | RID lab | 3 |
| LEATHER SKIVING CUTTER | 6 | 2016 January | RID lab | 6 |
| Permanent Cold Patch Asphalt (1) | 100 | 2016 January | RID lab | 5 |
| Permanent Cold Patch Asphalt (2) | 200 | 2017 | To be procured | 200 |
| Bridge repair materials for the pilot project | 1 set | 2016 November | Sihanouk DPWT | 1 set |
| Carbon fiber sheets | 1 set | 2016 November | Sihanouk DPWT | 1 set |
| Bridge repair materials for the pilot project | 1 set | 2016 November | JICA team office | To be donated |
| Carbon fiber sheets | 1 set | 2016 November | JICA team office | To be donated |

*1: MPWT main office building, 3rd floor

*2: Bridge unit warehouse in RID laboratory

## TO CR of JICA CAMBODIA OFFICE

### PROJECT MONITORING SHEET

**Project Title : The Project for Strengthening Capacity for Maintenance of Roads and Bridges**

**Version of the Sheet: Ver.5 (June 2017)**

**Name: Koichi Ogawa (Title: Chief Advisor)**

**Name: Yuzo Mizota (Title:Team Leader)**

**Submission Date: 28 June, 2017**

# I. Summary

## 1 Progress

### 1-1 Progress of Inputs

| Inputs | Plan as of April 2015 | Actual as of June 2017 |
|---|---|---|
| Experts | **85.17MM**<br>1 Long term expert (chief advisor)<br>2 Short term expert<br>1) Team Leader / Bridge Maintenance Engineer<br>2) Deputy-team leader / Road Maintenance Planner<br>3) Bridge Inspection Engineer<br>4) Bridge Repair Engineer (1) (Planning and Design)<br>5) Bridge Repair Engineer (2) (Repairing work Expert)<br>6) Bridge Maintenance Planner<br>7) Road Maintenance Engineer(1)<br>8) Road Maintenance Engineer(2)<br>9) Coordinator / Assistant for Road and Bridge Inspection<br>10) Coordinator for other relevant project / C/P training Supervision | **73.32MM (79.1 %: rate of latest total MM, 92.65 MM)**<br>1 Long term expert (chief advisor)<br>2 Short term expert:<br>1) Team Leader / Bridge Maintenance Engineer<br>2) Deputy-team leader / Road Maintenance Planner<br>3) Bridge Inspection Engineer (1)<br>4) Bridge Inspection Engineer (2)<br>5) Bridge Repair Engineer (1) (Planning and Design)<br>6) Bridge Repair Engineer (2) (Repairing work Expert)<br>7) Bridge Repair Engineer (3)<br>8) Bridge Maintenance Planner<br>9) Road Maintenance Engineer(1) / Equipment procurement engineer<br>10) Road Maintenance Engineer(2)<br>11) Coordinator / Assistant for Road and Bridge Inspection<br>12) Coordinator for other relevant project / C/P training Supervision<br>13) Road Maintenance Engineer (3) (Overloading Control)<br>14) Database Expert |
| Trainees Received | Provision of training in Cambodia and in Japan or other countries | 1st training in Japan (Oct.13-24 2015, 7 trainees)<br>2nd training in Japan (Oct.30-Nov.12 2016, 7 trainees) |

| | | |
|---|---|---|
| Equipment | Equipment for bridge and road maintenance | Attachment-1 |
| Others | N/A | N/A |
| Cambodia side Operational Expenses | - Arrangement of counterpart personnel<br>- Implementation cost for pilot repair works<br>- Travel expenses and allowances for participants of the seminars and trainings organized as the project activities<br>- Maintenance cost of the JICA project equipment<br>- Office space including its utility cost | - Arrangement of counterpart personnel<br>- Implementation cost for pilot repair works<br>- Travel expenses and allowances for participants of the seminars and trainings organized as the project activities<br>- Maintenance cost of the JICA project equipment<br>- Office space including its utility cost |

## 1-2 Progress of Activities

**Progress of activities is indicated in Monitoring Sheet Form 3-2 (PDM) and Form 3-3 (PO).**

## 1-3 Achievement of Output

| Output/Indicators | Achievement (%) | | Major Results | Status<br>OT: On time<br>SFT: Scheduled for later<br>DL: Delayed |
|---|---|---|---|---|
| | Plan | Actual | | |
| **Output-1: The bridge maintenance cycle is established.** | | | | |
| 1) The annual action plan for bridge maintenance cycle is developed by August every year for each targeted DPWT. | 80 | 100 | All of the nationwide bridges, totally 2,422 bridges, have been inspected. | OT |
| | | 80 | Annual action plan for bridge maintenance cycle has been drafted through the activities for budgeting of FY 2017 to MEF using the 3-year nationwide maintenance plan (Chapter 21 and Chapter 61).<br>Also, the action plan for the final year of the project was prepared to practically implement the plan for bridge maintenance cycle circulation. | OT |
| 2) At least 5 officials of RID engineers pass exam of bridge maintenance cycle | 80 | 100 | 17 RID officials completed Maintenance Expert (ME) training program.<br>ME training for DPWTs has been started. | OT |
| 3) The annual bridge maintenance budget is drafted at the target DPWTs of 2nd year and 3rd year by May every year. | 80 | 80 | For the FY 2018 budget proposal of following activities are the major:<br>1. Budget proposal for "bridge" for Chapter 61 routine maintenance and Chapter 21 Investment<br>2. 3-year bridge maintenance plan<br>3. Road routine maintenance for measurement of IRI | OT |
| 4) 3 year bridge maintenance strategic plan of | 80 | 80 | A nationwide 3-year maintenance plan was updated. | OT |

| | | | | |
|---|---|---|---|---|
| short term is prepared by RID/MPWT every August | | | | |
| **Output-2: Road and bridge inspection capacity of RID is enhanced.** | | | | |
| 1) The road and bridge maintenance manuals are drafted by August 2015 and finalized by June 2017. | 90 | 90 | The road and bridge maintenance manuals are drafted. Khmer version of bridge inspection manual has been drafted and under review, aiming at August, 2017 for its completion. | OT |
| 2) The selected bridges of all DPWTs are inspected according to the maintenance manual. | 70 | 100 | The selected bridges of all DPWTs were inspected according to the maintenance manual. Additionally, 173 damaged bridges were identified and detailed inspection for the bridges has been carried out. | OT |
| | | 70 | A pilot project for overloading control at Tsubasa Bridge has been conducted from September 2016 to August 2017. The mid-term seminar on the pilot project of overloading vehicle control at Tsubasa Bridge was held in April, 2017. | OT |
| 3) The selected roads in the targeted DPWTs are inspected according to the maintenance manual | 70 | 70 | 1-digit roads throughout the nation and the selected roads in Kandal and Takeo province were successfully inspected by IRI-based inspection method according to the maintenance manual. IRI measurement in Kep province is planned as the next activity. | OT |
| 4) The inspection results are registered to the road and bridge database by RID until November every year. | 80 | 100 | Database was created and installed in RID office. All the inspection results have been registered in the database. | OT |
| 5) At least 5 officials of RID's engineers pass road and bridge inspection test. | 80 | 100 | Two (2) RID officials have passed road ME training program. Seventeen (17) RID officials have passed bridge ME training program. | OT |
| **Output-3. Road and bridge repair capacity of RID is enhanced.** | | | | |
| 1) The road and bridge repair manuals are drafted by January 2016 and finalized by June 2017. | 90 | 100 | The road and bridge repair manuals are drafted. Also, Khmer versions have been drafted. | OT |
| 2) The identified roads and bridges in the targeted DPWTs are repaired according to the repair manuals and the inspection results. | 100 | 100 | The 1st pilot project for road repair work has been implemented for selected roads in Kandal province. 3 bridges in Kandal province and 2 bridges in Phnom Penh were repaired by crack sealing method through the 1st pilot project. A bridge in Preah Sihanouk province was repaired | OT |

<table>
<tr><td></td><td></td><td></td><td>by carbon fiber sheet method through 2nd pilot project.</td><td></td></tr>
<tr><td>3) The repair results are registered to the road and bridge database by RID within 1 month after the completion of repair works.</td><td>80</td><td>100</td><td>The repair record format for data input has been prepared in the database system.<br>Repair results of the 1st and 2nd pilot project have been registered in the database.</td><td>OT</td></tr>
<tr><td>4) At least 5 officials of RID's engineers pass road and bridge repair test.</td><td>80</td><td>100</td><td>Three (3) RID officials completed road ME training program, and six (6) RID officials completed bridge Maintenance Expert (ME) training program, instructed by Japanese experts.</td><td>OT</td></tr>
<tr><td colspan="5">Output-4. Road and bridge maintenance cycle is introduced to other DPWTs and concerning agencies</td></tr>
<tr><td>1) Bridge inspection is carried out at the more than 80% DPWTs (20/25 DPWTs).</td><td>80</td><td>100</td><td>Bridge inspection was conducted in all the DPWTs' jurisdictions.</td><td>OT</td></tr>
<tr><td>2) More than 80% DPWTs attends the seminar held in the Project.</td><td>80</td><td>100</td><td>Twenty two (22) DPWTs attended the series of workshops and seminars.<br>Attendance Rate:<br>
<table>
<tr><td></td><td>WS1</td><td>WS 2</td><td>WS 3</td><td>WS 4</td><td>WS 5</td><td>WS 6</td><td>TJ1</td><td>SIP 1</td><td>SIP 2</td></tr>
<tr><td>RID</td><td>18</td><td>14</td><td>11</td><td>6</td><td>9</td><td>12</td><td>2</td><td>17</td><td>2</td></tr>
<tr><td>DPWT</td><td>-</td><td>0</td><td>-</td><td>0</td><td>43</td><td>8</td><td>4</td><td>61</td><td>20</td></tr>
<tr><td>ITC</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>327</td><td></td></tr>
<tr><td>Other</td><td>13</td><td>9</td><td>11</td><td>0</td><td>9</td><td>11</td><td>1</td><td>69</td><td>35</td></tr>
<tr><td>Total</td><td>31</td><td>23</td><td>22</td><td>6</td><td>61</td><td>31</td><td>7</td><td>474</td><td>57</td></tr>
</table>
<table>
<tr><td></td><td>WS7</td><td>DB</td><td>DB</td><td>PA</td><td>ME</td><td>OC</td><td>T.J2</td><td>OC</td><td>DB</td></tr>
<tr><td>RID</td><td>6</td><td>4</td><td>3</td><td>9</td><td>3</td><td></td><td>4</td><td></td><td>16</td></tr>
<tr><td>DPWT</td><td>2</td><td></td><td></td><td></td><td></td><td></td><td>1</td><td></td><td></td></tr>
<tr><td>Other</td><td>7</td><td></td><td></td><td>4</td><td>1</td><td>9</td><td>2</td><td>11</td><td>12</td></tr>
<tr><td>Total</td><td>15</td><td>4</td><td>3</td><td>13</td><td>4</td><td>9</td><td>7</td><td>11</td><td>28</td></tr>
</table>
<table>
<tr><td></td><td>RR1</td><td>RR2</td><td>RR3</td><td>RR4</td><td>RR5</td><td>BI1</td><td>BI2</td><td>BI3</td><td>BR1</td></tr>
<tr><td>RID</td><td>7</td><td>16</td><td>2</td><td>2</td><td>2</td><td>2</td><td>1</td><td>0</td><td>8</td></tr>
<tr><td>DPWT</td><td>12</td><td>0</td><td>8</td><td>11</td><td>10</td><td>1</td><td>1</td><td>1</td><td>11</td></tr>
<tr><td>Other</td><td>5</td><td>18</td><td>3</td><td>4</td><td>1</td><td>1</td><td>2</td><td>4</td><td>6</td></tr>
<tr><td>Total</td><td>24</td><td>34</td><td>13</td><td>17</td><td>13</td><td>4</td><td>4</td><td>5</td><td>25</td></tr>
</table>
<table>
<tr><td></td><td>BR2</td><td>BR3</td><td>BR4</td><td>BR5</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>RID</td><td>0</td><td>0</td><td>0</td><td>0</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>DPWT</td><td>6</td><td>23</td><td>11</td><td>16</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Other</td><td>3</td><td>0</td><td>0</td><td>0</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Total</td><td>9</td><td>23</td><td>11</td><td>16</td><td></td><td></td><td></td><td></td><td></td></tr>
</table>
WS: Workshop, DB: Database,<br>PA: Project Achievement,</td><td>OT</td></tr>
</table>

| | | | | |
|---|---|---|---|---|
| | | | ME: Maintenance Expert,<br>OC: Overloading Control, TJ: Training in Japan<br>TJ: Training in Japan<br>RR: Road repair workshop<br>BI: Bridge inspection workshop<br>BR: Bridge repair workshop<br><br>Attendance of DPWTs: 88% (22 out of 25 DPWTS) | |
| 3) The project activities are disseminated to other agencies concerning road/bridge maintenance. (number is not specified but with increments through the project) | 80 | 80 | Kickoff Seminar on 22 May 2015: MPWT, DPWTs, MEF, WB, ADB<br>SIP seminar in March 2016: road and bridge maintenance jointly held with ITC<br>Coordination of bridge database utilization with university (ITC)<br>Participation of database training from HEC, RMC and SPEAD<br>Bridge inspection jointly with ITC<br><br>Another workshop on Database system management is planned in September, 2017. | OT |

## 1-4 Achievement of the Project Purpose

| Project Purpose/Indicators | Achievement (%) | Situation | Expected Time of achievement |
|---|---|---|---|
| Project Purpose: Capacity of RID to supervise implementing bodies maintaining roads and bridges is enhanced. | | | |
| 1) Inspection results done by the three target DPWTs are approved by RID based on the manuals by the end of the Project. | 100 | [Road] 1-digit roads throughout the nation and the selected roads in Kandal and Takeo provinces have been successfully inspected by IRI-based inspection.<br>[Bridge] Inspection of all the bridges in Cambodia has been completed in December, 2015. Additionally, 173 damaged bridges were identified and detailed inspection for the bridges has been carried out. | OT |
| 2) Repair results done by the two target DPWTs are approved by RID based on the manuals by the end of the Project | 100 | [Road] The 1st pilot project for road repair work has been implemented for selected roads in Kandal province.<br>[Bridge] 3 bridges from Kandal DPWT and 2 bridges from Phnom Penh DPWT were repaired by crack sealing method under the 1st pilot project. Also, a bridge in Preah Sihanouk province was repaired by carbon fiber sheet method through 2nd pilot project. | OT |
| 3) The above two target DPWTs prepare a draft budget for road and bridge | 80 | [Road] The road condition evaluated by IRI is to be used for the FY 2018 budget proposal to MEF.<br>[Bridge] Budget for bridge maintenance | OT |

| | | | |
|---|---|---|---|
| maintenance for FY 2018 respectively within pre-agreed schedule. | | was proposed for FY 2017 to MEF using the 3-year maintenance plan (Chapter 21 and Chapter 61). The updated plan will be proposed for the FY2018 budget. | |
| 4) Road and bridge maintenance cycle is explained and shared with concerned offices and units at the project wrap-up seminar. | 60 | Instructions for road and bridge maintenance cycle have been given to MPWT and DPWT officials through Maintenance Expert (ME) training program.<br>The project team has been in cooperation with Institute of Technology of Cambodia (ITC) on bridge database system and bridge repair pilot projects. | OT |
| 5) Maintenance budget of road and bridge is prepared by RID according to the road and bridge maintenance cycle | 80 | [Road] The road condition evaluated by IRI is to be used for the FY 2018 budget proposal to MEF through ME program for understanding maintenance cycle.<br>[Bridge] Budget on bridge maintenance for FY2017 has been proposed to MEF based on the 3-year maintenance plan.<br>USD2million out of USD10million that was proposed for FY2017 has already been approved by MEF for replacement of 4 damaged bridges.<br>[Road/Bridge] The budget for road and bridge inspection has been approved by MEF. | OT |

## 1-5 Achievement of the Overall Goal

| Overall Goal/Indicators | Achievement (%) | Situation | Expected Time of achievement |
|---|---|---|---|
| Overall Goal: Appropriate maintenance of roads and bridges is managed by MPWT. | | | |
| 1) The road and bridge database is updated once a year. | 80 | Prototype database that stores all the bridges and selected roads on the nationwide road network has been developed and installed in RID office in 2016.<br>The database information has been updated with road inspection result in Takeo and detailed inspection result of 173 damaged bridges in 2017. | OT |
| 2) Road and bridge maintenance plans are updated once a year based on the result of the road and bridge database updated | 80 | [Road] Maintenance plans for road sections inspected in Kandal province has been drafted and to be used in the budget proposal for FY2018. Additionally, maintenance budget plan for Takeo province is planned to be prepared for FY2018.<br>[Bridge] 3-year bridge maintenance plan has been drafted based on information in | OT |

| | | | |
|---|---|---|---|
| | | the database. Part of the plan has been used in the FY2017 budget proposal. The plan is to be updated for FY2018 in accordance with the action plan proposed in the project. | |
| 3) Road and bridge maintenance is carried out based on the road and bridge maintenance plan and the maintenance and repair manuals, under supervision of RID. | 80 | Road and bridge maintenance will be conducted based on the 3-year bridge maintenance plan and the road maintenance plan for the FY 2017 under supervision of RID<br>All the road and bridge pilot repair projects have been completed. | OT |
| 4) The road maintenance and repair manuals, and the bridge maintenance and repair manuals are regularly reviewed | 30 | [Road] Khmer version of road repair manual has been completed.<br>[Bridge] Khmer version of bridge repair manual has been completed.<br>Khmer version of bridge inspection manual has been drafted and under review.<br>[Road/Bridge] The manuals are to be reviewed every 5 years and updated if necessary in order to reflect opinions of site engineers. | OT |

## 1-6 Changes of Risks and Actions for Mitigation

### 1) Activity 2-8: Overloading control

A pilot project for overloading control has been carried out on schedule.

### 2) Equipment for bridge inspection tools

Special equipment for close bridge inspection has been procured. The appropriate utilization of the equipment has been monitored for sustainability by JICA experts.

### 3) Equipment for road inspection tools

Additional DRIMS equipment has been procured. The appropriate utilization of the equipment has been monitored for sustainability by JICA experts.

### 4) Facilitate Maintenance Expert (ME) training program

ME training program has been implemented since 2016. The following trainings have been carried out since then:

- ME training on road inspection using DRIMS for RID officials
- ME training on road repair for RID officials
- 5 workshops on the road repair manual for 25 DPWTs
- ME training on bridge inspection for RID officials
- ME training on bridge repair for RID officials
- 5 workshops on the bridge repair manual for 25 DPWTs

**1-7 Progress of Actions undertaken by JICA**

**N/A**

**1-8 Progress of Actions undertaken by Gov. of Cambodia**

**N/A**

**1-9 Progress of Environmental and Social Considerations (if applicable)**

**N/A**

**1-10 Progress of Considerations on Gender/Peace Building/Poverty Reduction (if applicable)**

**N/A**

**1-11 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)**

In regard to IRI measurement for road maintenance, Road Infrastructure Department (RID) has clarified the application range of two (2) types of IRI-measurement equipment, DRIMS and ROMDAS. The application range has been defined as shown in the following table.

| Implementation Stage | Road Digit Class | ROMDAS | DRIMS |
|---|---|---|---|
| Short Term (The next 3 years) | 1&2 | Planning | Planning |
| | 3&4 | N/A | Routine maintenance |
| | City Roads | N/A | |
| Mid Term (3 – 10 years) | 1&2 | Planning | (Routine maintenance) |
| | | Routine Maintenance | |
| | 3&4 | N/A | Planning |
| | City Roads | N/A | Routine maintenance |

**Note: One office will be responsible for both ROMDAS and DRIMS operation, data analysis and data use.**

## 2 Delay of Work Schedule and/or Problems (if any)

**2-1 Detail**

**1) Activity 2-8: Overloading control**

A pilot project for overloading control has been prepared on schedule.

**2-2 Cause**

**N/A**

**2-3 Action to be taken**

Progress of the pilot project has to be monitored for smooth implementation of the project.

**2-4 Roles of Responsible Persons/Organizations (JICA, Gov. of Cambodia, etc.)**

**N/A**

## 3 Modification of the Project Implementation Plan

**3-1 PO**

PO of the project is prepared. It is attached as Monitoring Sheet Form 3-3.

**3-2 Other modifications on detailed implementation plan**

***(Remarks: The amendment of R/D and PDM (title of the project, duration, project site(s), target group(s), implementation structure, overall goal, project purpose, outputs, activities, and input) should be authorized by JICA HDQs. If the project team deems it necessary to modify any part of R/D and PDM, the team may propose the draft.)***

**PDM revised from Ver.3 to Ver.4 is attached as Monitoring Sheet Form 3-2.**

**PM Form 3-2 (1) Monitoring Sheet I (PDM Ver.3)**

**PM Form 3-2 (2) Monitoring Sheet I (PDM Ver.4)**

## 4 Measures undertaken by Gov. of Cambodia or Project Team to Ensure the Sustainability of Project after the Project Completion

### 4-1 Financial Sustainability

"The 3-year bridge maintenance strategic plan" has been drafted based on information stored in the bridge database developed in the project. The plan was submitted to MEF (Ministry of Economic and Finance) in 2016 as the FY 2017 budget proposal and negotiations have been taken between MPWT and MEF for its approval. The maintenance plan will be updated for the FY2018 budget proposal.

### 4-2 Technical Sustainability

All the technologies transferred in the project have to be continued as the part of the project activities in accordance with the action plan stated in "4-3 Institutional Sustainability". The technical sustainability has to be appropriately monitored by the JICA expert team.

### 4-3 Institutional Sustainability

The project has proposed the action plan for bridge maintenance cycle circulation in order to:

1) stipulate required tasks and responsibilities of RID and

2) institutionalize the Maintenance Expert (ME) training program.

## II. Project Monitoring Sheet I & II　*as Attached*

# Project Monitoring Sheet I (Revision of Project Design Matrix)

Version 3

Dated December 2016

**Project Title:** The Project for Strengthening Capacity for Maintenance of Roads and Bridges
**Implementation Agency:** Road Infrastructure Department of Ministry of Public Work and Transport (RID MPWT)
**Target Groups:** Engineers of RID
**Period of Project:** April 2015 – March 2018
**Project Site:** Cambodia
**Target Area:** Roads and Bridges under MPWT

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| **Overall Goal**<br>Appropriate maintenance of roads and bridges is managed by MPWT. | 1. The road and bridge database is updated once / a year.<br><br>2. Road and bridge maintenance plans are updated once / a year base on the result of the road and bridge database updated.<br><br>3. Road and bridge maintenance is carried out based on the road and bridge maintenance plan and the maintenance and repair manuals, under supervision of RID.<br><br>4. The road maintenance and repair manuals, and the bridge maintenance and repair manuals are regularly reviewed. | 1. Log record of the database, random sample check of individual data<br>2. The maintenance plans, corresponding data from the database<br>3. The maintenance record, the maintenance plans and manuals<br>4. Minutes of the review meeting | - Country's socio-political situation does not change rapidly. | Prototype bridge database which covered all the bridges on national roads was developed and installed in RID office.<br><br>3-year bridge maintenance plan and the maintenance budget for FY2017 were drafted based on developed database.<br><br>3-year bridge maintenance plan and the annual maintenance budget will be updated by RID.<br><br>[Road] Khmer version of road repair manual was completed.<br>[Bridge] Khmer version of bridge inspection and repair | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| | | | | manual is under preparation. | |
| **Project Purpose**<br>Capacity of RID to supervise implementing bodies maintaining roads and bridges is enhanced. | 1. Inspection results done by the three target DPWTs are approved by RID based on the manuals by the end of the Project.<br>2. Repair results done by the two target DPWTs are approved by RID base on the manuals by the end of the Project.<br>3. The above two target DPWTs prepare a draft budget for roads and bridge maintenance for FY 2018 respectively within pre-agreed schedule. | 1. DPWT inspection reports and on-site confirmation by RID<br>2. DPWT repair reports and on-site confirmation by RID.<br>3. The said draft budget and its submission date<br>4. Number and name of the participated offices and unit<br>5. Interest level of the participants through the questionnaire. | - Organizational arrangement of MPWT is not changed drastically. | [Road] 1-digit roads throughout the nation and the selected roads in Kandal and Takeo province were successfully inspected by IRI-based inspection.<br>[Bridge] Inspection of all the bridges in Cambodia has been completed in December 2015.<br><br>[Road] The 1st pilot project for road repair work has been implemented for selected roads in Kandal province.<br>[Bridge] 3 bridges from Kandal DPWT and 2 bridges from Phnom Penh DPWT were repaired by crack sealing method under the 1st pilot project.<br><br>[Road] The road condition evaluated by IRI is used for the FY 2017 budget request to MEF.<br>[Bridge] Budget for bridge maintenance was proposed for FY 2017 to MEF using the | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| | 4. Road and bridge maintenance cycle is explained and shared to concerning offices and units at the project wrap-up seminar.<br><br>5. Maintenance budget of road and bridge is prepared by RID according to the road and bridge maintenance cycle | | | 3-year maintenance plan (Chapter 21 and Chapter 61)<br><br>Training for ME (Maintenance Experts on Road and Bridges) program was conducted for understanding road and bridge maintenance cycle.<br><br>[Road] The road condition evaluated by IRI is used for the FY 2017 budget request to MEF through ME program for understanding maintenance cycle.<br>[Bridge] Budget for bridge maintenance was proposed for FY 2017 to MEF using the 3-year maintenance plan through ME program for understanding maintenance cycle. | |
| **<u>Outputs</u>**<br>1. The bridge maintenance cycle is established. | 1-1. The annual action plan for bridge maintenance cycle is developed and approved by August every year for each targeted DPWT. | 1-1. The annual action plan and it's date developed and approved<br>1-2. The exam results and participants list<br>1-3. The drafted budget and its date<br>1-4. 3 Year Bridge Maintenance Strategic | - The trained staff/officers remain at the job.<br>- Roles of DPWTs and other concerning offices and units are not changed including budget preparation | Annual action plan for bridge maintenance cycle was drafted through the activities for budgeting of FY 2017 to MEF using the 3-year nationwide maintenance plan (Chapter 21 and | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| | | Plan | system. | Chapter 61)<br>Annual action plan (draft) for bridge maintenance was prepared through a drafted 3-year bridge maintenance plan while a detailed action plan should be prepared for targeted DPWTs. | |
| | 1-2. At least 5 officials of RID engineers pass exam of bridge maintenance cycle. | | | Seventeen (17) RID officials completed Maintenance Expert (ME) program required by Japanese experts. | |
| | 1-3. The annual bridge maintenance budget is drafted at the target DPWTs of 2nd year and 3rd year by May every year. | | | For budget request of FY 2017, following supports are the major:<br>1. Budget request for "bridge" for Chapter 61 routine maintenance and Chapter 21 Investment<br>2. 3-year bridge maintenance plan<br>3. Road routine maintenance for measurement of IRI | |
| | 1-4. 3 Year Bridge Maintenance Strategic Plan of short term is prepared by RID/MPWT every August | | | A nationwide 3-year maintenance plan was drafted.<br>The maintenance priority list was developed accordingly. | |
| 2. Road and bridge inspection capacity of RID is enhanced. | 2-1. The road and bridge maintenance manuals are drafted by August 2015 | 2-1. The manuals and its' date prepared | | The road and bridge maintenance manuals | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| | and finalized by June 2017.<br><br>2-2. The selected bridges of all DPWTs are inspected according to the maintenance manual.<br><br>2-3. The selected roads in the targeted DPWTs are inspected according to the maintenance manual<br><br>2-4. The inspection results are registered to the road and bridge database by RID until November every year.<br><br>2-5. At least 5 officials of RID's engineers pass road and bridge inspection test. | 2-2. Inspection record and sample on-site confirmation<br>2-3. Inspection record and corresponding data for sample check<br>2-4. The test results and participants list | | are drafted. Khmer versions are being prepared.<br><br>The selected bridges of all DPWTs were inspected according to the maintenance manual.<br>A pilot project for overloading control at Tsubasa Bridge started behind the proposed schedule of preliminary study.<br><br>1-digit roads throughout the nation and the selected roads in Kandal and Takeo province were successfully inspected by IRI-based inspection method according to the maintenance manual.<br><br>Database was created and installed in RID office.<br>All the inspection results have been registered in the database.<br><br>Two (2) RID officials have passed road ME training program.<br>Seventeen (17) RID officials have passed | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| | | | | bridge ME training program. | |
| 3. Road and bridge repair capacity of RID is enhanced. | 3-1. The road and bridge repair manuals are drafted by January 2016 and finalized by June 2017.<br><br>3-2. The identified roads and bridges in the targeted DPWTs are repaired according to the repair manuals and the inspection results.<br><br>3-3. The repair results are registered to the road and bridge database by RID within 1 month after the completion of repair works.<br><br>3-4. At least 5 officials of RID's engineers pass road and bridge repair test. | 3-1. The manuals and its' date prepared<br>3-2. Repair record and sample on-site confirmation<br>3-3. Repair record and corresponding data for sample check<br>3-4. The test results and participants list | | The road and bridge repair manuals are drafted. Khmer versions are being prepared.<br><br>The 1st pilot project for road repair work has been implemented for selected roads in Kandal province.<br>3 bridges from Kandal province and 2 bridges from Phnom Penh were repaired by crack sealing method through the 1st pilot project.<br><br>Repair results of the 1st pilot project are registered in the database system.<br>The form of the repair result is prepared.<br><br>Three (3) RID officials completed road ME training program, and five (5) RID officials completed bridge Maintenance Expert (ME) training program, instructed by Japanese experts. | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| 4. Road and bridge maintenance cycle is introduced to other DPWTs and concerning agencies. | 4-1. Bridge inspection is carried out at the more than 80% DPWTs (20/25 DPWTs).<br><br>4-2. More than 80% DPWTs attends the seminar held in the Project.<br><br>4-3. The project activities are disseminated to other agencies concerning road/bridge maintenance. (number is not specified but with increments through the project) | 4-1. Bridge inventory data<br>4-2. The participants list<br>4-3. Publicity matter | | Bridge inspection was conducted in all the DPWTs.<br><br>Ten (10) DPWTs attended the series of seminars.<br>Attendance of DPWTs: 40% (10 out of 25 DPWTS)<br><br>Kickoff Seminar on 22 May 2015: MPWT, DPWTs, MEF, WB, ADB<br>SIP seminar in March 2016: road and bridge maintenance jointly held with ITC<br>Coordination of bridge database utilization with university (ITC)<br>Participation of database training from HEC, RMC and SPEAD<br>Bridge inspection jointly with ITC | |

| **Activities** | **Inputs** | | |
|---|---|---|---|
| 1-1. To review the present bridge maintenance cycle and the works of RID in comparison to the existing Japanese system<br>1-2. To propose 3 year bridge maintenance strategic plan with the annual action plan to establish a proper bridge maintenance cycle<br>1-3. To propose annual action plan for bridge maintenance cycle to establish a proper bridge maintenance cycle based on the review results<br>1-4. To practice the action plan<br>1-5. To hold workshop of the bridge maintenance cycle<br>1-6. To prepare draft annual bridge maintenance budget<br><br>2-1. To review and develop road maintenance manual<br>2-2. To review and develop bridge maintenance manual, including a database frame<br>2-3. To hold training workshops on road and bridge inspections<br>2-4. For bridge, to inspect bridges and prepare rough cost estimation of the repair works for all DPWTs<br>2-5. For roads, to inspect roads using IRI and prepare rough cost estimation of the repair works at the target DPWTs<br>2-6.To register the inspection results in the database by RID<br>2-7. To revise the road and bridge maintenance manuals incorporating lessons learned from the above activities by organizing review workshops<br>2-8. To conduct preliminary study on overloading control (at Tsubasa Bridge)<br><br>3-1. To review and establish road repair manual<br>3-2. To review and establish bridge repair manual<br>3-3. To hold training workshops on road and bridge repairs<br>3-4. To identify roads and bridges for the pilot repair works based on the inspection results at the target DPWTs<br>3-5. To establish repair plan for the identified roads and bridges at the target DPWTs<br>3-6. To repair the identified roads and bridges at the target DPWTs | (Japan side)<br>1. A chief advisor / A long term expert<br><br>2. Short term experts<br>1) Team Leader / Bridge Maintenance Engineer<br>2) Deputy-team leader / Road Maintenance Planner<br>3) Bridge Inspection Engineer<br>4) Bridge Repair Engineer (1) (Planning and Design)<br>5) Bridge Repair Engineer (2) (Repairing work Expert)<br>6) Bridge Maintenance Planner<br>7) Road Maintenance Engineer(1) / Equipment procurement engineer<br>8) Road Maintenance Engineer(2)<br>9) Coordinator / Assistant for Road and Bridge Inspection<br>10) Coordinator for other relevant project / C/P training Supervision<br>11) Road Maintenance Engineer (3) (Overloading Control)<br><br>3. Equipment for road and bridge maintenance<br><br>4. C/P training<br><br>5. Cost for seminars and Trainings as the project activities | (Cambodia side)<br>1. Arrangement of counterpart personnel<br>1) Project Director<br>2) Project Manager<br>3) Other Necessary Personnel<br><br>2. Implementation cost for the pilot repair works<br><br>3. Travel expenses and allowances for the participants of the seminars and trainings organized as the project activities<br><br>4. Maintenance cost of the JICA project equipment<br><br>5. Office space including its utility cost (electricity, water, internet and other necessary office facilities)<br><br>6. Etc. | - Conditions of roads and bridges under MPWT are not rapidly deteriorated.<br>- Flood with large scale is not occurred annually.<br><br>Pre-condition<br>N/A |

| | | | |
|---|---|---|---|
| 3-7. To evaluate the above repair works<br>3-8. To revise the road and bridge repair manual incorporating lessons learned from the above activities by organizing review workshop by organizing review workshop<br><br>4-1. To organize seminars for other DPWTs – trainings on road and bridge inspection<br>4-2. To organize seminars for other DPWTs – trainings on road and bridge repair<br>4-3. To organize the project wrap-up seminar | | | |

# Project Monitoring Sheet I (Revision of Project Design Matrix)

Version 4

Dated June 2017

**Project Title:** The Project for Strengthening Capacity for Maintenance of Roads and Bridges
**Implementation Agency:** Road Infrastructure Department of Ministry of Public Work and Transport (RID MPWT)
**Target Groups:** Engineers of RID
**Period of Project:** April 2015 – March 2018
**Project Site:** Cambodia
**Target Area:** Roads and Bridges under MPWT

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| **Overall Goal**<br>Appropriate maintenance of roads and bridges is managed by MPWT. | 1. The road and bridge database is updated once / a year.<br>2. Road and bridge maintenance plans are updated once / a year base on the result of the road and bridge database updated. | 1. Log record of the database, random sample check of individual data<br>2. The maintenance plans, corresponding data from the database<br>3. The maintenance record, the maintenance plans and manuals<br>4. Minutes of the review meeting | - Country's socio-political situation does not change rapidly. | Prototype bridge database which covered all the bridges on national roads was developed and installed in RID office.<br>[Road] Maintenance plans for road sections inspected in Kandal province has been drafted and to be used in the budget proposal for FY2017.<br>[Bridge] 3-year bridge maintenance plan has been drafted based on information in the database. Part of the plan is to be used in the budget proposal for FY2017. | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| | 3. Road and bridge maintenance is carried out based on the road and bridge maintenance plan and the maintenance and repair manuals, under supervision of RID.<br><br>4. The road maintenance and repair manuals, and the bridge maintenance and repair manuals are regularly reviewed. | | | Road and bridge maintenance will be conducted based on the 3-year bridge maintenance plan and the road maintenance plan for the FY 2017 under supervision of RID<br>All the road and bridge pilot repair projects have been completed.<br><br>[Road] Khmer version of road repair manual has been completed.<br>[Bridge] Khmer version of bridge repair manual has been completed.<br>Khmer version of bridge inspection manual has been drafted and under review. | |
| **Project Purpose**<br>Capacity of RID to supervise implementing bodies maintaining roads and bridges is enhanced. | 1. Inspection results done by the three target DPWTs are approved by RID based on the manuals by the end of the Project. | 1. DPWT inspection reports and on-site confirmation by RID<br>2. DPWT repair reports and on-site confirmation by RID.<br>3. The said draft budget and its submission date<br>4. Number and name of the participated offices and unit<br>5. Interest level of the participants through the questionnaire. | - Organizational arrangement of MPWT is not changed drastically. | [Road] 1-digit roads throughout the nation and the selected roads in Kandal and Takeo provinces have been successfully inspected by IRI-based inspection.<br>[Bridge] Inspection of all the bridges in Cambodia has been completed in December, 2015. Additionally, 173 | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| | 2. Repair results done by the two target DPWTs are approved by RID base on the manuals by the end of the Project.<br><br>3. The above two target DPWTs prepare a draft budget for roads and bridge maintenance for FY 2018 respectively within pre-agreed schedule. | | | damaged bridges were identified and detailed inspection for the bridges has been carried out.<br><br>[Road] The 1st pilot project for road repair work has been implemented for selected roads in Kandal province. [Bridge] 3 bridges from Kandal DPWT and 2 bridges from Phnom Penh DPWT were repaired by crack sealing method under the 1st pilot project. Also, a bridge in Preah Sihanouk province was repaired by carbon fiber sheet method through 2nd pilot project.<br><br>[Road] The road condition evaluated by IRI is to be used for the FY 2017 budget request to MEF. [Bridge] Budget for bridge maintenance was proposed for FY 2017 to MEF using the 3-year maintenance plan (Chapter 21 and Chapter 61) | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| | 4. Road and bridge maintenance cycle is explained and shared to concerning offices and units at the project wrap-up seminar.<br><br>5. Maintenance budget of road and bridge is prepared by RID according to the road and bridge maintenance cycle | | | Instructions for road and bridge maintenance cycle have been given to MPWT and DPWT officials through Maintenance Expert (ME) training program.<br>The project team has been in cooperation with Institute of Technology of Cambodia (ITC) on bridge database system and bridge repair pilot projects.<br><br>[Road] The road condition evaluated by IRI is to be used for the FY 2017 budget request to MEF through ME program for understanding maintenance cycle.<br>[Bridge] Budget on bridge maintenance for FY 2017 has been proposed to MEF based on the 3-year maintenance plan.<br>[Road/Bridge] The budget for road and bridge inspection has been approved by MEF. | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| **Outputs**<br>1. The bridge maintenance cycle is established. | 1-1. The annual action plan for bridge maintenance cycle is developed and approved by August every year for each targeted DPWT.<br><br>1-2. At least 5 officials of RID engineers pass exam of bridge maintenance cycle.<br><br>1-3. The annual bridge maintenance budget is drafted at the target DPWTs of 2nd year and 3rd year by May every year. | 1-1. The annual action plan and it's date developed and approved<br>1-2. The exam results and participants list<br>1-3. The drafted budget and its date<br>1-4. 3 Year Bridge Maintenance Strategic Plan | - The trained staff/officers remain at the job.<br>- Roles of DPWTs and other concerning offices and units are not changed including budget preparation system. | Annual action plan for bridge maintenance cycle has been drafted through the activities for budgeting of FY 2017 to MEF using the 3-year nationwide maintenance plan (Chapter 21 and Chapter 61).<br>Also, the action plan for the final year of the project was prepared to practically implement the plan for bridge maintenance cycle circulation.<br><br>Seventeen (17) RID officials completed Maintenance Expert (ME) program required by Japanese experts.<br><br>For budget request of FY 2017, following supports are the major:<br>1. Budget request for "bridge" for Chapter 61 routine maintenance and Chapter 21 Investment<br>2. 3-year bridge maintenance plan<br>3. Road routine maintenance for measurement of IRI | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| | 1-4. 3-year Bridge Maintenance Strategic Plan of short term is prepared by RID/MPWT every August | | | A nationwide 3-year maintenance plan was updated. | |
| 2. Road and bridge inspection capacity of RID is enhanced. | 2-1. The road and bridge maintenance manuals are drafted by August 2015 and finalized by June 2017.<br><br>2-2. The selected bridges of all DPWTs are inspected according to the maintenance manual.<br><br>2-3. The selected roads in the targeted DPWTs are inspected according to the maintenance manual | 2-1. The manuals and its' date prepared<br>2-2. Inspection record and sample on-site confirmation<br>2-3. Inspection record and corresponding data for sample check<br>2-4. The test results and participants list | | The road and bridge maintenance manuals are drafted. Khmer version for bridge maintenance manual is being prepared.<br><br>The selected bridges of all DPWTs were inspected according to the maintenance manual.<br>Additionally, 173 damaged bridges were identified and detailed inspection for the bridges has been carried out.<br>A pilot project for overloading control at Tsubasa Bridge started behind the proposed schedule of preliminary study.<br><br>1-digit roads throughout the nation and the selected roads in Kandal and Takeo province were successfully inspected by IRI-based inspection method according to the | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| | | | | maintenance manual.<br>IRI measurement in Kep province is planned as the next activity. | |
| | 2-4. The inspection results are registered to the road and bridge database by RID until November every year. | | | Database was created and installed in RID office.<br>All the inspection results have been registered in the database. | |
| 3. Road and bridge repair capacity of RID is enhanced. | 2-5. At least 5 officials of RID's engineers pass road and bridge inspection test. | | | Two (2) RID officials have passed road ME training program.<br>Seventeen (17) RID officials have passed bridge ME training program. | |
| | 3-1. The road and bridge repair manuals are drafted by January 2016 and finalized by June 2017. | 3-1. The manuals and its' date prepared<br>3-2. Repair record and sample on-site confirmation<br>3-3. Repair record and corresponding data for sample check | | The road and bridge repair manuals are drafted. Also, Khmer versions have been drafted. | |
| | 3-2. The identified roads and bridges in the targeted DPWTs are repaired according to the repair manuals and the inspection results. | 3-4. The test results and participants list | | The 1st pilot project for road repair work has been implemented for selected roads in Kandal province.<br>3 bridges from Kandal province and 2 bridges from Phnom Penh were repaired by crack sealing method through the 1st pilot project.<br>A bridge in Preah | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| | | | | Sihanouk province was repaired by carbon fiber sheet method through 2nd pilot project. | |
| 4. Road and bridge maintenance cycle is introduced to other DPWTs and concerning agencies. | 3-3. The repair results are registered to the road and bridge database by RID within 1 month after the completion of repair works. | | | The repair record format for data input has been prepared in the database system. Repair results of the 1st and 2nd pilot project have been registered in the database. | |
| | 3-4. At least 5 officials of RID's engineers pass road and bridge repair test. | | | Three (3) RID officials completed road ME training program, and Six (5) RID officials completed bridge Maintenance Expert (ME) training program, instructed by Japanese experts. | |
| | 4-1. Bridge inspection is carried out at the more than 80% DPWTs (20/25 DPWTs). | 4-1. Bridge inventory data<br>4-2. The participants list<br>4-3. Publicity matter | | Bridge inspection was conducted in all the DPWTs' jurisdictions. | |
| | 4-2. More than 80% DPWTs attends the seminar held in the Project. | | | Twenty two (22) DPWTs attended the series of workshops and seminars. Attendance of DPWTs: 88% (22 out of 25 DPWTS) | |

| Project Summary | Objectively Verifiable Indicators | Means of Verification | Important Assumptions | Achievement | Remarks |
|---|---|---|---|---|---|
| | 4-3. The project activities are disseminated to other agencies concerning road/bridge maintenance. (number is not specified but with increments through the project) | | | Kickoff Seminar on 22 May 2015: MPWT, DPWTs, MEF, WB, ADB<br>SIP seminar in March 2016: road and bridge maintenance jointly held with ITC<br>Coordination of bridge database utilization with university (ITC)<br>Participation of database training from HEC, RMC and SPEAD<br>Bridge inspection jointly with ITC | |

| **Activities** | **Inputs** | | |
|---|---|---|---|
| 1-1. To review the present bridge maintenance cycle and the works of RID in comparison to the existing Japanese system<br>1-2. To propose 3 year bridge maintenance strategic plan with the annual action plan to establish a proper bridge maintenance cycle<br>1-3. To propose annual action plan for bridge maintenance cycle to establish a proper bridge maintenance cycle based on the review results<br>1-4. To practice the action plan<br>1-5. To hold workshop of the bridge maintenance cycle<br>1-6. To prepare draft annual bridge maintenance budget<br><br>2-1. To review and develop road maintenance manual<br>2-2. To review and develop bridge maintenance manual, including a database frame<br>2-3. To hold training workshops on road and bridge inspections<br>2-4. For bridge, to inspect bridges and prepare rough cost estimation of the repair works for all DPWTs<br>2-5. For roads, to inspect roads using IRI and prepare rough cost estimation of the repair works at the target DPWTs<br>2-6.To register the inspection results in the database by RID<br>2-7. To revise the road and bridge maintenance manuals incorporating lessons learned from the above activities by organizing review workshops<br>2-8. To conduct preliminary study on overloading control (at Tsubasa Bridge)<br><br>3-1. To review and establish road repair manual<br>3-2. To review and establish bridge repair manual<br>3-3. To hold training workshops on road and bridge repairs<br>3-4. To identify roads and bridges for the pilot repair works based on the inspection results at the target DPWTs<br>3-5. To establish repair plan for the identified roads and bridges at the target DPWTs<br>3-6. To repair the identified roads and bridges at the target DPWTs | (Japan side)<br>1. A chief advisor / A long term expert<br><br>2. Short term experts<br>1) Team Leader / Bridge Maintenance Engineer<br>2) Deputy-team leader / Road Maintenance Planner<br>3) Bridge Inspection Engineer (1)<br>4) Bridge Inspection Engineer (2)<br>5) Bridge Repair Engineer (1) (Planning and Design)<br>6) Bridge Repair Engineer (2) (Repairing work Expert)<br>7) Bridge Repair Engineer (3)<br>8) Bridge Maintenance Planner<br>9) Road Maintenance Engineer(1) / Equipment procurement engineer<br>10) Road Maintenance Engineer(2)<br>11) Coordinator / Assistant for Road and Bridge Inspection<br>12) Coordinator for other relevant project / C/P training Supervision<br>13) Road Maintenance Engineer (3) (Overloading Control)<br>14) Database Expert<br><br>3. Equipment for road and bridge maintenance<br><br>4. C/P training<br><br>5. Cost for seminars and Trainings as the project activities | (Cambodia side)<br>1. Arrangement of counterpart personnel<br>1) Project Director<br>2) Project Manager<br>3) Other Necessary Personnel<br><br>2. Implementation cost for the pilot repair works<br><br>3. Travel expenses and allowances for the participants of the seminars and trainings organized as the project activities<br><br>4. Maintenance cost of the JICA project equipment<br><br>5. Office space including its utility cost (electricity, water, internet and other necessary office facilities)<br><br>6. Etc. | - Conditions of roads and bridges under MPWT are not rapidly deteriorated.<br>- Flood with large scale is not occurred annually.<br><br>Pre-condition<br>N/A |

| | | | |
|---|---|---|---|
| 3-7. To evaluate the above repair works<br>3-8. To revise the road and bridge repair manual incorporating lessons learned from the above activities by organizing review workshop by organizing review workshop<br><br>4-1. To organize seminars for other DPWTs – trainings on road and bridge inspection<br>4-2. To organize seminars for other DPWTs – trainings on road and bridge repair<br>4-3. To organize the project wrap-up seminar | | | |

Form 3-3 Project Monitoring Sheet II (Revision of Plan of Operation)

Ver. 3

Dated: December, 2016

Project Title: The Project for Strengthening Capacity for Maintenance of Roads and Bridges

| INPUTS | Expert in charge | Plan/ Actual | 2015 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2016 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2017 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2018 1 | 2 | 3 | Remarks | Monitoring Issue | Monitoring Solution |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Expert** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chief Advisor | OGAWA Koichi | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Team Leader / Bridge Maintenance Engineer | MIZOTA Yuzo | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Deputy Team Leader / Road Maintenance Planner | NAKAJIMA Takashi | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bridge Repair Engineer (1) (Plannning and Design) | TOKUMASU Ken | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bridge Repair Engineer (2) (Repairing Work Expert) | SUZUKI Hideyuki | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bridge Repair Engineer (3) | Tamagawa Dai | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bridge Inspection Engineer (1) | TSUKAMOTO Shigeaki | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bridge Inspection Engineer (2) | TSUJIMOTO Eichi | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Road Maintenance Engineer (1) | HEIMA Hiroyuki | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Equipment Procurement / Road Maintenance Engineer (1) | MAEDA Tatsuro | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Road Maintenance Engineer (1) | ONO Masazumi | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Road Maintenance Engineer (2) | IBAYASHI Kou | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Road Maintenance Engineer (3) | HAKAMADA Fumio | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bridge Maintenance Planner | WATANABE Masatoshi | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Database System Engineer | KUMAGAI Takahiro | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coordinator / Assistant for Road and Bridge Inspection | OHTAKE Hiroaki | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coordinator for other Relevant Project | YUMITA Kazuo | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Equipment** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Equipment for Pilot Project | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Training in Japan** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| ACTIVITIES | | Expert in charge | Plan/ Actual | 2015 | | | | | | | | | | 2016 | | | | | | | | | | 2017 | | | | | | | | | | | | 2018 | | | Responsible Organization | | Achievements | Issue & Countermeasures |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | Japan | Cambodia | | |
| Output-1: The bridge maintenance cycle is established. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-1 | To review the present bridge maintenance cycle and the works of RID in comparison to the existing Japanese system | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-1-1 | To collect existing Data and analyze them with RID | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-1-2 | To study the cases of Japanese bridge maintenance cycle that be able to apply to Cambodia | Mizota / Tokumasu / Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-1-3 | To review the result and discuss with RID | Ogawa / Tokumasu / Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-2 | To propose 3 year bridge maintenance strategic plan with the annual action plan to establish a proper bridge maintenance cycle | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-2-1 | To draft the action plan with RID | Mizota / Nakajima/ Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-2-2 | To supervise "1.2.1 activities" and review with RID for final action plan | Ogawa / Mizota / Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-3 | To practice the action plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-3-1 | To supervise the action of RID and the other organization | Mizota/Nakajima/ Tokumasu/Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-3-2 | To supervise "1.3.1 activities" and evaluate it with RID | Ogawa /Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-4 | To hold workshops of the bridge maintenance cycle | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-4-1 | To prepare workshops and materials for the workshops and explain their part at workshops with RID | Nakajima/Tokumasu/ Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-4-2 | To organize the workshops and review the result with RID | Ogawa / Mizota / Nakajima / Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-5 | To prepare draft annual bridge maintenance budget | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-5-1 | To draft the maintenance budget of target DPWT | Mizota / Nakajima / Watanabe/Ono | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-5-2 | To draft the maintenance budget with RID | Mizota / Nakajima / Watanabe/Ono | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-5-3 | To supervise "1.5.2 activities" and review drafts with RID | Ogawa | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |


| ACTIVITIES | Expert in charge | Plan/ Actual | 2015 | 2016 | 2017 | 2018 | Responsible Organization | Achievements | Issue & Countermeasures |
|---|---|---|---|---|---|---|---|---|---|
| | | | 4 5 6 7 8 9 10 11 12 | 1 2 3 4 5 6 7 8 9 10 11 12 | 1 2 3 4 5 6 7 8 9 10 11 12 | 1 2 3 | Japan Cambodia | | |

| ACTIVITIES | | Expert in charge | Plan/ Actual | 2015 | | | | | | | | | | | | 2016 | | | | | | | | | | | | 2017 | | | | | | | | | | | | 2018 | | | Responsible Organization | | Achievements | Issue & Countermeasures |
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| | | | | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | Japan | Cambodia | | |
| Output-2: Road and bridge inspection capacity of RID is enhanced. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-1 | To review and develop road maintenance manual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-1-1 | To review road maintenance manual with RID | Nakajima / Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-1-2 | To draft new road maintenance manual with RID | Nakajima / Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-1-3 | To supervise "2.1.1-2 activities" and review it with RID | Ogawa / Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-2 | To review and develop bridge maintenance manual, including a database framework | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-2-1 | To draft new bridge maintenance manual with RID | Tokumasu/ Tsukamoto/Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-2-2 | To supervise "2.2.1 activities" and review it with RID for finalizing bridge maintenance manual | Ogawa/Tokumasu/ Tsukamoto/Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-3 | To hold training workshops on road and bridge inspections | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-3-1 | To prepare workshops and materials for the workshops and explain their part at workshops with RID | Tokumasu/Tsukamoto/ Ohtake/Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-3-2 | To organize the workshops and review the result with RID | Ogawa/Tokumasu/ Tsukamoto/Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4 | For bridge, to inspect bridges and prepare rough cost estimation of the repair works for all DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4-1 | To prepare draft inspection plan for bridges with RID | Tokumasu/ Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4-2 | To implement bridge inspection with RID and DPWTs engineers at all the DPWTs | Tokumasu/ Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4-3 | To prepare rough cost estimation of the repair works for bridges with RID | Tokumasu/ Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4-4 | To supervise "2.4.1-3 activities" and discuss with RID | Ogawa/ Mizota/ Tokumasu/Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-5 | For roads, to inspect roads using IRI and prepare rough cost estimation of the repair works at the target DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-5-1 | To prepare draft inspection plan for roads with RID | Nakajima/ Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-5-2 | To implement road inspection with RID and DPWTs engineers at the target DPWTs | Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-5-3 | To prepare rough cost estimation of the repair works for roads with RID | Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-5-4 | To supervise "2.5.1-3 activities" and discuss with RID | Ogawa/ Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-6 | To register the inspection results in the database by RID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-6-1 | To register the inspection results of roads with RID | Nakajima/ Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-6-2 | To register the inspection results of bridges with RID | Tokumasu/Tsukamoto/ Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-6-3 | To supervise "2.6.1-2 activities" and review the result with RID | Ogawa/ Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-7 | To register the inspection results in the database by RID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-7-1 | To revise the road and bridge maintenance manual with RID | Mizota/Nakajima/ Tokumasu/Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-7-2 | To prepare workshops and materials for the workshops and explain their part at workshops with RID | Mizota/Nakajima/ Tokumasu/Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-7-3 | To organize the workshops and review the result with RID | Ogawa/Mizota / Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-8 | To conduct preliminary study on overloading control (at Tsubasa Bridge) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-8-1 | Overloading enforcement in foreign countries | Hakamada | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-8-2 | Countermeasures against overloading issue at Tsubasa Bridge | Hakamada | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| ACTIVITIES | Expert in charge | Plan/ Actual | 2015 | | | | | | | | | | 2016 | | | | | | | | | | | | 2017 | | | | | | | | | | | | 2018 | | | Responsible Organization | | Achievements | Issue & Countermeasures |
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| | | | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | Japan | Cambodia | | |

| ACTIVITIES | | Expert in charge | Plan/ Actual | 2015 | | | | | | | | | | 2016 | | | | | | | | | | | | 2017 | | | | | | | | | | | | 2018 | | | Responsible Organization | | Achievements | Issue & Countermeasures |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | Japan | Cambodia | | |
| **Output-3. Road and bridge repair capacity of RID is enhanced.** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-1 | To review and establish road repair manual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-1-1 | To review road repair manual with RID | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-1-2 | To draft new road repair manual with RID | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-1-3 | To supervise "3.1.1-2 activities" and review the result with RID for finalize repair manual | Ogawa / Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-2 | To review and establish bridge repair manual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-2-1 | To review bridge repair manual with RID | Mizota / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-2-2 | To draft new bridge repair manual with RID | Mizota / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-2-3 | To supervise "3.2.1-2 activities" and review the result with RID for finalize repair manual | Ogawa / Mizota / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-3 | To hold training workshops on road and bridge repairs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-3-1 | To prepare workshops and materials for the workshops and explain their part at workshops with RID | Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-3-2 | To organize the workshops and review the result with RID | Ogawa / Mizota / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-4 | To identify roads and bridges for the pilot repair works based on the inspection results at the target DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-4-1 | To prepare priority sites list of roads for the pilot repair works with RID | Mizota / Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-4-2 | To prepare priority sites list of bridges for the pilot repair works with RID | Mizota / Nakajima / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-4-3 | To identify roads and bridges for the pilot repair works with RID | Ogawa | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-5 | To establish repair plan for the identified roads and bridges at the target DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-5-1 | To draft repair plan for roads with RID | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-5-2 | To draft repair plan for bridges with RID | Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-5-3 | To review and finalize repair plan for the identified roads and bridges with RID | Ogawa /Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-6 | To repair the identified roads and bridges at the target DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-6-1 | To repair the identified roads with RID and DPWTs engineers at the target DPWTs | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-6-2 | To repair the identified bridges with RID and DPWTs engineers at the target DPWTs | Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-6-3 | To supervise "3.6.1-2 activities" and discuss with RID | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | ACTIVITIES | Expert in charge | Plan/ Actual | 2015 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2016 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2017 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2018 1 | 2 | 3 | Responsible Organization Japan | Cambodia | Achievements | Issue & Countermeasures |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3-7 | To evaluate the above repair works | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-7-1 | To prepare evaluation report of the roads repair works with RID | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-7-2 | To prepare evaluation report of the bridges repair works with RID | Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-7-3 | To supervise "3.7.1-2 activities" and review the result with RID | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-8 | To revise the road and bridge repair manual incorporating lessons learned from the above activities by organizing review workshop by organizing review workshop | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-8-1 | To draft revise version of road repair manual with RID | Mizota / Nakajima / Heima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-8-2 | To draft revise version of bridge repair manual with RID | Mizota / Nakajima / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-8-3 | To supervise "3.8.1-2 activities" and review the result with RID for finalize revised repair manual | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | ACTIVITIES | Expert in charge | Plan/ Actual | 2015 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2016 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2017 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2018 1 | 2 | 3 | Responsible Organization Japan | Cambodia | Achievements | Issue & Countermeasures |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Output-4. Road and bridge maintenance cycle is introduced to other DPWTs and concerning agencies. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-1 | To organize seminars for other DPWTs – trainings on road and bridge inspection | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-1-1 | To prepare seminars and materials for the seminars and explain their part at workshops with RID | Mizota / Nakajima / Yumita | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-1-2 | To organize the seminars and review the result with RID | Ogawa / Mizota / Yumita | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-2 | To organize seminars for other DPWTs – trainings on road and bridge Repair | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-2-1 | To prepare seminars and materials for the seminars and explain their part at workshops with RID | Mizota / Nakajima / Yumita | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-2-2 | To organize the seminars and review the result with RID | Ogawa/Mizota/ Nakajima/Yumita | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-3 | To organize the project wrap-up seminar for other DPWTs by RID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-3-1 | To organize the project wrap-up seminar for other DPWTs | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Monitoring Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kick-off Meeting | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Kick-off Meeting | | Plan | | ▲ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | ▲22 May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Joint Coordinating Committee | | Plan | | | | ▲ | | | | | | ▲ | | | | | | ▲ | | | | | | ▲ | | | | | | ▲ | | | | | | ▲ | | | | | |
| | | | Actual | | | | ▲10 July | | | | | | ▲18 January | | | | | | | ▲10 August | | | | | ▲15 December | | | | | | ▲23 June | | | | | | | | | | | |
| | Revision of PDM from Version zero to one. | | Plan | | ▲ | | | | | | | | | | | ▲ | | | | | | | | | | | | ▲ | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Submission of Monitoring Sheet | | Plan | | | | ▲ | | | | | | | ▲ | | | | | | ▲ | | | | | | ▲ | | | | | | ▲ | | | | | | ▲ | | | | |
| | | | Actual | | | | ▲10 July | | | | | | | ▲12 February | | | | | | ▲4 August | | | | | ▲20 December | | | | | | ▲28 June | | | | | | | | | | | |
| Reports/Documents | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Final Report | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ▲ | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Evaluation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Terminal Evaluation | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ▲ | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

# Attachment 1 Purchased Equipment and Materials

**Equipment**

| Item | No. of Items | Year/Month (procurement) | Storage Site | Status |
|---|---|---|---|---|
| DRIMS | 2 | 2015 April,<br>2016 October | RID office*1 | Donated |
| DRIMS-relevant accessary | 2 | 2016 September | RID office | Donated |
| Binocular | 5 | 2015 August | RID office | Donated |
| MacBook Pro（laptop PC） | 1 | 2015 October | RID office | Donated |
| DELL Inspiron 15 5000series（laptop PC） | 1 | 2015 October | RID office | Donated |
| FileMaker Sever (software) | 1 | 2015 October | RID office | Donated |
| FileMaker Pro (software) | 1 | 2015 October | RID office | Donated |
| Inspection hammer | 10 | 2015 October | RID office | Donated |
| Waist pouch for inspection equipment | 10 | 2015 October | RID office | Donated |
| Flashlight | 10 | 2015 October | RID office | Donated |
| Portable type weighing scale | 2 | 2016 September | Tsubasa Bridge | Donated |
| Load cell (spare parts) | 1 | 2016 December | Tsubasa Bridge | Donated |
| Container house | 1 | 2016 September | Tsubasa Bridge | Donated |
| Inspection camera | 1 | 2016 September | RID office | Donated |
| iPad | 10 | 2016 September | RID office | Donated |
| Laptop computer | 2 | 2016 September | RID office | Donated |
| Safety belt | 5 | 2016 September | RID office | Donated |
| Ladder | 1 | 2016 September | RID office | Donated |
| Head beam light | 2 | 2016 September | RID office | Donated |
| Head light | 5 | 2016 September | RID office | Donated |
| Transceiver | 1 | 2016 September | RID office | Donated |
| Shovel | 2 | 2016 September | RID office | Donated |
| Grass Cutter | 1 | 2016 September | RID office | Donated |
| Color cone | 5 | 2016 September | RID office | Donated |
| Vehicle stopper | 1 | 2016 September | RID office | Donated |
| Movie recorder (road monitor) | 2 | 2016 September | RID office | Donated |

**Construction materials for pilot project for road/bridge repair works**

| Item | No. of Items | Year/Month (procurement) | Storage Site | Status |
|---|---|---|---|---|
| BOND E206 (BASE) | 15 | 2016 January | RID lab*2 | 12.3 |
| BOND E 206 (HARDENER) | 15 | 2016 January | RID lab | 12.3 |
| BOND E390 (BASE) | 15 | 2016 January | RID lab | 13.3 |
| BOND E 390 (HARDENER) | 15 | 2016 January | RID lab | 13.3 |
| CYLINDER FOR BOND | 12 (box) | 2016 January | RID lab | 10.6 (box) |
| WEIGHTING MACHINE | 1 | 2016 January | RID lab | 1 |
| WIRE BRUSH | 6 | 2016 January | RID lab | 6 |
| SPATURA FOR MIXING | 3 | 2016 January | RID lab | 3 |
| CHALK | 1 (box) | 2016 January | RID lab | 0.5 (box) |
| BUCKET | 6 | 2016 January | RID lab | 6 |
| STOP WATCH | 3 | 2016 January | RID lab | 3 |
| SPATURA FOR PAINT | 3 | 2016 January | RID lab | 3 |
| MEASURE CUP | 6 | 2016 January | RID lab | 6 |
| SANDPAPER | 6 | 2016 January | RID lab | 6 |
| BLOWER | 3 | 2016 January | RID lab | 3 |
| LEATHER SKIVING CUTTER | 6 | 2016 January | RID lab | 6 |
| Permanent Cold Patch Asphalt (1) | 100 | 2016 January | RID lab | 5 |
| Bridge repair materials for the pilot project | 1 set | 2016 November | Sihanouk DPWT | 1 set |
| Carbon fiber sheets | 1 set | 2016 November | Sihanouk DPWT | 1 set |

*1: MPWT main office building, 3rd floor

*2: Bridge unit warehouse in RID laboratory

# Annex 6 List of Certificates

Annex 6

# List of Certificate

Date: 2nd to 10th August **1 st and 2nd batch**

**Workshop of Bridge Inspection**

| No | Name | Position | Organization | Class | Certificate |
|---|---|---|---|---|---|
| 1 | Nin Menakak | Deputy Chief Officer | RID | Master Trainer | Given |
| 2 | Eam Sovisoth | Officer | RID | Master Trainer | Given |
| 3 | Long Davuth | Officer | RID | Master Trainer | Given |
| 4 | Chhouk Sochea | Officer | RID | Master Trainer | Given |
| 5 | Nut Sovanneth | Officer | RID | Master Trainer | Given |
| 6 | You Dara | Deputy Director | RID | Master Trainer | Given |
| 7 | Chheng Gyvorn | Officer | RID | Pass Training | Given |
| 8 | Ut Vinakim | Officer | RID | Pass Training | Given |
| 9 | Soung Run | Officer | DPWT | Pass Training | Given |
| 10 | Doung Vannak | Officer | DPWT | Pass Training | Given |
| 11 | Mall Sopheap | Officer | DPWT | Pass Training | Given |
| 12 | Kai Sarun | Engineering | DPWT | Pass Training | Given |
| 13 | Ry Borey | Officer | DPWT | Pass Training | Given |
| 14 | Cheam Kimphor | Officer | DPWT | Pass Training | Given |
| 15 | Seng Samey | Officer | DPWT | Pass Training | Given |
| 16 | Noun Boramey | Officer | DPWT | Pass Training | Given |
| 17 | Heng Chanravy | Officer | DPWT | Pass Training | Given |
| 18 | Dum Sothea | Officer | DPWT | Pass Training | Given |
| 19 | Kith Ponnak | Officer | DPWT | Pass Training | Given |
| 20 | Seng Somsoth | Officer | DPWT | Pass Training | Given |
| 21 | Long Davuth | Officer | DPWT | Pass Training | Given |
| 22 | Chheng Gyvorn | Officer | DPWT | Pass Training | Given |
| 23 | Ut Vinakim | Officer | DPWT | Pass Training | Given |
| 24 | Nut Sovanneth | Officer | DPWT | Pass Training | Given |
| 25 | Tuon Chanrotha | Officer | DPWT | Pass Training | Given |
| 26 | Chea Vantha | Officer | DPWT | Pass Training | Given |
| 27 | Meas Sophannarith | Officer | DPWT | Pass Training | Given |
| 28 | Neth Radin | Officer | DPWT | Pass Training | Given |
| 29 | Reth Rotanak | Officer | DPWT | Pass Training | Given |
| 30 | Chhun Dimalong | Officer | DPWT | Pass Training | Given |
| 31 | Sok San | Officer | DPWT | Pass Training | Given |
| 32 | Chea Vuthy | Officer | DPWT | Pass Training | Given |
| 33 | Nou Vanna | Officer | DPWT | Pass Training | Given |
| 34 | Keo Chetra | Officer | DPWT | Pass Training | Given |
| 35 | Lim Ponleu | Officer | DPWT | Pass Training | Given |
| 36 | Sao Visal | Officer | DPWT | Pass Training | Given |
| 37 | Meas Sothea | Officer | DPWT | Pass Training | Given |

Annex 6

# List of Certificate

Date: 11th to 19th October **3rd & 4thTraining**
**Workshop of Bridge Inspection**

| No | Name | Position | Organization | Class | Certificate |
|---|---|---|---|---|---|
| 1 | Chheng Gyvorn | Officer | RID | Pass Training | Given |
| 2 | Doung Vannak | Officer | RID | Pass Training | Given |
| 3 | Mall Sopheap | Officer | DPWT | Pass Training | Given |
| 4 | Kang Penghak | Director DPWT | DPWT | Pass Training | Given |
| 5 | Pheng Chanchhaya | Officer | DPWT | Pass Training | Given |
| 6 | Khut Khemra | Officer | DPWT | Pass Training | Given |
| 7 | Nut Panharith | Officer | DPWT | Pass Training | Given |
| 8 | Kwan Kumpheak | Officer | DPWT | Pass Training | Given |
| 9 | Keo Chanborey | Officer | DPWT | Pass Training | Given |
| 10 | Kang Kimchhun | Officer | DPWT | Pass Training | Given |
| 11 | Sy Sereyvath | Officer | DPWT | Pass Training | Given |
| 12 | Bun Soupheng | Officer | DPWT | Pass Training | Given |
| 13 | Rath Sovann Sathya | Lecture | DPWT | Pass Training | Given |
| 14 | Prok Narith | Lecture | DPWT | Pass Training | Given |
| 15 | Ieng Huo | Officer | DPWT | Pass Training | Given |
| 16 | Kang Chantra | Deputy Director | DPWT | Pass Training | Given |
| 17 | Dit Sereyreatana | Chief Officer | DPWT | Pass Training | Given |
| 18 | Im Vibol | Deputy Chief | DPWT | Pass Training | Given |
| 19 | Sombo Moral | Deputy Chief | DPWT | Pass Training | Given |
| 20 | Chhim Vibol | Officer | DPWT | Pass Training | Given |
| 21 | Koelith Vireak | Officer | DPWT | Pass Training | Given |
| 22 | Moul Sam ang | Officer | DPWT | Pass Training | Given |
| 23 | Nuon Seiha | Officer | DPWT | Pass Training | Given |
| 24 | Touch Sophan | Deputy Chief | DPWT | Pass Training | Given |
| 25 | Ngin Sopheak | Officer | DPWT | Pass Training | Given |
| 26 | Hout Sambor | Officer | DPWT | Pass Training | Given |
| 27 | Yong Vandy | Officer | DPWT | Pass Training | Given |
| 28 | Vou Thory | Officer | DPWT | Pass Training | Given |
| 29 | Sam Thonem | Officer | DPWT | Pass Training | Given |
| 30 | Houern Sengtin | Officer | DPWT | Pass Training | Given |
| 31 | Mok Vira | Officer | DPWT | Pass Training | Given |
| 32 | Kim Socheat | Officer | DPWT | Pass Training | Given |
| 33 | San Thonem | Officer | DPWT | Pass Training | Given |
| 34 | Soung Run | Officer | DPWT | Pass Training | Given |
| 35 | Ut Vinakim | Officer | DPWT | Pass Training | Given |
| 36 | Koeurn Molika | Officer | DPWT | Pass Training | Given |
| 37 | Lock Sokhakomarath | Officer | DPWT | Pass Training | Given |

Annex 6

# List of Certificate

Date: 13th to 15th December **5th Workshop**
**Workshop of Bridge Inspection**

| No | Name | Position | Organization | Class | Certificate |
|---|---|---|---|---|---|
| 1 | Chrea Tharavuth | Deputy Director | DPWT | Pass Training | Given |
| 2 | Um San | Deputy Officer | DPWT | Pass Training | Given |
| 3 | Sophal Ratitya | Officer | DPWT | Pass Training | Given |
| 4 | Keo Thuonwara | Bureau Chief | DPWT | Pass Training | Given |
| 5 | Hem Seiha | Officer | DPWT | Pass Training | Given |
| 6 | Om Moniroth | Technical Officer | DPWT | Pass Training | Given |
| 7 | Theng Davon | Technical Officer | DPWT | Pass Training | Given |
| 8 | Chhouk Sothea | Officer | DPWT | Pass Training | Given |
| 9 | Chum Piseth | Officer | DPWT | Pass Training | Given |
| 10 | Lim Bunnarith | Officer | DPWT | Pass Training | Given |
| 11 | Seng Lida | Officer | DPWT | Pass Training | Given |
| 12 | Oum Som | Officer | DPWT | Pass Training | Given |
| 13 | Va Panha | Officer | MPWT | Pass Training | Given |

Annex 6

# List of Certificate

Date: 9th to 15th June
**Workshop of Bridge Repair**

| No | Name | Position | Organization | Class | Certificate |
|---|---|---|---|---|---|
| 1 | Nin Menakak | Deputy Chief Officer | RID | Master Trainer | Given |
| 2 | Eam Sovisoth | Deputy Officer | RID | Master Trainer | Given |
| 3 | Long Davuth | Officer | RID | Master Trainer | Given |
| 4 | Dvong Dhhomratanak | Officer | RID | Master Trainer | Given |
| 5 | Chhouk Sochea | Officer | RID | Master Trainer | Given |
| 6 | Nuth Sovanneth | | RID | Master Trainer | Given |
| 7 | You Dara | Deputy Director | RID | Master Trainer | Given |
| 8 | Keat Sarun | Deputy Director | RID | Master Trainer | Given |
| 9 | Rous Sreng | Deputy of Technique Office | RID | Master Trainer | Given |
| 10 | Koy Somrith Visoth | Deputy Officer | RID | Master Trainer | Given |
| 11 | Nut Sovannith | Officer | RID | Master Trainer | Given |
| 12 | Kao Mynykol | Deputy Director | DPWT | Pass training | Given |
| 13 | Chhouk Kimseoun | Deputy Director | DPWT | Pass training | Given |
| 14 | Chan Rith | Officer | MPWT | Pass training | Given |
| 15 | Sa Sivutha | Deputy Officer | MPWT | Pass training | Given |
| 16 | Prum Chanmonyodom | Officer | PWTTD | Pass training | Given |
| 17 | Din Virak | Deputy Officer | DPWT | Pass training | Given |
| 18 | Morm Soputhy | Deputy of Safe Guard | DPWT | Pass training | Given |
| 19 | Doung Vannak | Deputy Officer | DPWT | Pass training | Given |
| 20 | Mok Sopheap | Officer | DPWT | Pass training | Given |
| 21 | Touch Chanserey Both | Deputy Officer of MPWT | DPWT | Pass training | Given |
| 22 | Oum Monyroth | Officer | DPWT | Pass training | Given |
| 23 | Long Maly | Officer | MPWT | Pass training | Given |
| 24 | Hout Vuthy | Deputy Officer of RMC | RMC | Pass training | Given |
| 25 | Oum Som | Technical Officer | DPWT | Pass training | Given |
| 26 | Kit Bunnak | Technical Officer | MPWT | Pass training | Given |
| 27 | Keo Sounnara | Deputy Director of DPWT | DPWT | Pass training | Given |
| 28 | Meal Sophanaroth | Officer | EXMID | Pass training | Given |
| 29 | Lim Cheatong | Deputy Director of DPWT | DPWT | Pass training | Given |
| 30 | Neth Radin | Officer | EXMID | Pass training | Given |
| 31 | Kang Penghak | Officer | DPWT | Pass training | Given |
| 32 | Kwan Kumpheak | Officer | DPWT | Pass training | Given |
| 33 | Chay Sophea | Deputy Director | DPWT | Pass training | Given |
| 34 | Eang Hour | Officer | DPWT | Pass training | Given |
| 35 | Phen Chan Chaya | Deputy of Technique Dept | DPWT | Pass training | Given |
| 36 | Kang Kimchun | Technical Officer | DPWT | Pass training | Given |
| 37 | Sy Vuth | Deputy of DPWT | DPWT | Pass training | Given |
| 38 | San Sereyseth | Deputy office | DPWT | Pass training | Given |
| 39 | Phorn Phal Vireakvuth | Officer | DPWT | Pass training | Given |
| 40 | Sao Visal | Officer | DPWT | Pass training | Given |
| 41 | Meas Sothea | Deputy Officer | DPWT | Pass training | Given |
| 42 | Morng Thavirak | Deputy Officer of RID | DPWT | Pass training | Given |
| 43 | Chea Vuthy | Officer | DPWT | Pass training | Given |
| 44 | Sorm Vibol Pheakdey | Officer | DPWT | Pass training | Given |
| 45 | Chun Dy Malong | Officer | DPWT | Pass training | Given |
| 46 | Jem Vicheka | Officer | DPWT | Pass training | Given |

# List of Certificate (Master Trainer)

**Road Repair**

| No | Name | Position | Organization | Class | Certificate |
|---|---|---|---|---|---|
| 1 | Hay Chandara | Officer | RID | Master Trainer | Given |
| 2 | Sitthy Panhavuth | Officer | RID | Master Trainer | Given |
| 3 | Veth Piseth | Officer | RID | Master Trainer | Given |
| 4 | You Dara | Deputy Director | RID | Master Trainer | Given |

# List of Certificate (Master Trainer)

**Road Inspection using IRI**

| No | Name | Position | Organization | Class | Certificate |
|---|---|---|---|---|---|
| 1 | Sa Sivutha | Officer | RID | Master Trainer | Given |
| 2 | Hay Chandara | Officer | RID | Master Trainer | Given |
| 3 | Sitthy Panhavuth | Officer | RID | Master Trainer | Given |
| 4 | Veth Piseth | Officer | RID | Master Trainer | Given |
| 5 | You Dara | Deputy Director | RID | Master Trainer | Given |

# Annex 7 List of Workshops and participants number

## Annex 7 List of workshops and seminars, number of participants

| No | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 25 | | By Output | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Entity | | | RID | Kandal | Takeo | Kampong Speu | Phnom Phen | Kampong Cham | Prey Veng | Kampot | Kep | Preah Sihanouk | Svay Rieng | Tbaung Khmum | Kratie | Stung Treng | Battambang | Pursat | Mondolkiri | Ratanak Kiri | Banteay Meanchey | Kampong Chhnang | Seim Reap | Kampong Thom | Koh Kong | Preah Vihear | Oddar Meanchey | Pailin | Other | Total | 1 | 2 | 3 | 4 | Total |
| Title | Related Output | Date | Nos Participants | 325 | 30 | 11 | 6 | 5 | 22 | 5 | 12 | 12 | 25 | 9 | 13 | 29 | 11 | 15 | 18 | 19 | 10 | 12 | 4 | 39 | 14 | 14 | 17 | 9 | 8 | 974 | 1,668 | 13 | 26 | 13 | 9 | 61 |
| | | | DPWT Count | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 25 | 297 | 507 | 211 | 653 | |
| Workshop 1st | 1 | 7-Aug-15 | | 16 | | | | | | | | | | | | | | | | | | | | | | | | | 15 | 31 | 31 | 0 | 0 | 0 | |
| Workshop 2nd | 1 | 17-Sep-15 | | 7 | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | 13 | 22 | 22 | 0 | 0 | 0 | |
| Workshop 3rd | 1 | 22-Oct-15 | | 8 | | | | | | | | | | | | | | | | | | | | | | | | | 22 | 30 | 30 | 0 | 0 | 0 | |
| Workshop 4th | 1 | 27-Oct-15 | | 10 | | | | | | | | | | | | | | | | | | | | | | | | | 25 | 35 | 35 | 0 | 0 | 0 | |
| Training in Japan (1) | 4 | 1-Oct-15 | | 2 | | | | | | 1 | 1 | | | | | | | | | | | | 1 | 1 | | | | | 1 | 7 | 0 | 0 | 0 | 7 | |
| Workshop 5th | 1 | 11-Dec-15 | | 8 | 1 | | | | | | 1 | | 1 | | | | | | | | | | 1 | | 2 | | | | 47 | 61 | 61 | 0 | 0 | 0 | |
| 1st pilot P | 3 | 25,27 Juan | 29-Jan | 11 | | | | | | | | | | | | | | | | | | | | | | | | | 12 | 23 | 0 | 0 | 23 | 0 | |
| 1st pilot P | 3 | 13,5,6,8 | Jan | 6 | | | | | | | | | | | | | | | | | | | | | | | | | 7 | 13 | 0 | 0 | 13 | 0 | |
| Workshop 6th | 1 | 18-Feb-16 | | 12 | 13 | | | | | | | | | | | | | | | | | | | | | | | | 26 | 51 | 51 | 0 | 0 | 0 | |
| SIP Seminar (Day1) | 4 | 1-Mar-16 | | 17 | | 1 | | | 2 | | | 5 | | | 2 | | | 3 | | 2 | | 3 | | 1 | 1 | 1 | 1 | | | 435 | 474 | 0 | 0 | 0 | 474 | |
| SIP Seminar (Day2) | 4 | 2-Mar-16 | | 2 | 1 | | | | 1 | 1 | | | 2 | | | 1 | | | | | | | 2 | | | | 1 | | 46 | 57 | 0 | 0 | 0 | 57 | |
| Workshop 7th | 1 | 31-Mar-16 | | 6 | 2 | | | | | | | | | | | | | | | | | | | | | | | | 7 | 15 | 15 | 0 | 0 | 0 | |
| Bridge Data Base Training | 2 | 4-May-16 | | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | 4 | 0 | 4 | 0 | 0 | |
| Bridge Data Base Training | 2 | 5-May-16 | | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | 3 | 0 | 3 | 0 | 0 | |
| Project Activities Management | 2 | 12-May-16 | | 9 | | | | | | | | | | | | | | | | | | | | | | | | | 4 | 13 | 0 | 13 | 0 | 0 | |
| ME Training for Guideline | 4 | 16-Jun-16 | | 3 | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 4 | 0 | 0 | 0 | 4 | |
| Tsubasa Bridge Overloading | 2 | 22-Jul-16 | | | | | | | | | | | | | | | | | | | | | | | | | | | 9 | 9 | 0 | 9 | 0 | 0 | |
| Training in Japan(2) | 4 | 28-Jul-16 | | 4 | | | | | | | | | | | 1 | | | | | | | | | | | | | | 2 | 7 | 0 | 0 | 0 | 7 | |
| 3rd JCC | 4 | 10-Aug-16 | | 6 | | | | | | | | | | | | | | | | | | | | | | | | | 18 | 24 | 0 | 0 | 0 | 24 | |
| Tsubasa Bridge Overloading Control | 2 | 13-Oct-16 | | | | | | | | | | | | | | | | | | | | | | | | | | | 11 | 11 | 0 | 11 | 0 | 0 | |
| Bridge Data Base Training | 2 | 23-Nov-16 | | 16 | | | | | | | | | | | | | | | | | | | | | | | | | 12 | 28 | 0 | 28 | 0 | 0 | |
| Road Rapair Guideline Workshop 1st | 3 | 14-Dec-16 | | 7 | 1 | 2 | 2 | | | 1 | 3 | 2 | | | | | | | | | | | | | 1 | | | | 5 | 24 | 0 | 0 | 24 | 0 | |
| 4th JCC | 4 | 15-Dec-16 | | 16 | | | | | | | | | | | | | | | | | | | | | | | | | 18 | 34 | 0 | 0 | 0 | 34 | |
| Road Rapair Guideline Workshop 2nd | 3 | 16-Dec-16 | | 2 | | | | | | | | | | | 3 | 2 | | | 2 | 2 | | | | | | | | | 3 | 14 | 0 | 0 | 14 | 0 | |
| Road Rapair Guideline Workshop 3rd | 3 | 19-Dec-16 | | 2 | | | | | | | | | | | | | 2 | 3 | | | | 2 | | | | | | 1 | 3 | 13 | 0 | 0 | 13 | 0 | |
| Road Rapair Guideline Workshop 4th | 3 | 20-Dec-16 | | 2 | | | | | | | | | | | | | | | | | 2 | | 7 | | | 1 | 2 | | 3 | 17 | 0 | 0 | 17 | 0 | |
| Road Rapair Guideline Workshop 5th | 3 | 21-Dec-17 | | 2 | | | | | 2 | 2 | | | 2 | 2 | | | | | | | | | | 2 | | | | | 1 | 13 | 0 | 0 | 13 | 0 | |
| Bridge Maintanance Cycle Meeting | 1 | 10-Feb-17 | | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | 6 | 6 | 0 | 0 | 0 | |
| Bridges Management Plan | 1 | 22-Feb-17 | | 6 | | | | | | | | | | | | | | | | | | | | | | | | | 3 | 9 | 9 | 0 | 0 | 0 | |
| Bridges Management Plan | 1 | 13-Mar-17 | | 5 | | | | | | | | | | | | | | | | | | | | | | | | | 4 | 9 | 9 | 0 | 0 | 0 | |
| Bridges Management Plan | 1 | 21-Apr-17 | | 4 | | | | | | | | | | | | | | | | | | | | | | | | | 3 | 7 | 7 | 0 | 0 | 0 | |
| Bridges Inspection Workshop Siem Reap | 2 | 19-May-17 | | 2 | | | | | | | | | | | | | | | | | | | 1 | | | | | | 1 | 4 | 0 | 4 | 0 | 0 | |
| Bridges Inspection Workshop Pursat | 2 | 22-May-17 | | 1 | | | | | | | | | | | | | | 1 | | | | | | | | | | | 2 | 4 | 0 | 4 | 0 | 0 | |

| No | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 25 | | By Output | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Entity | | | RID | Kandal | Takeo | Kampong Speu | Phnom Phen | Kampong Cham | Prey Veng | Kampot | Kep | Preah Sihanouk | Svay Rieng | Tbaung Khmum | Kratie | Stung Treng | Battambang | Pursat | Mondolkiri | Ratanak Kiri | Banteay Meanchey | Kampong Chhnang | Seim Reap | Kampong Thom | Koh Kong | Preah Vihear | Oddar Meanchey | Pailin | Other | Total | 1 | 2 | 3 | 4 | Total |
| Bridges Inspection Workshop Sihanouk Ville | 2 | 23-May-17 | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | 4 | 5 | 0 | 5 | 0 | 0 | |
| 1st Maintenance Operation Meeting | 1 | 26-May-17 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | 6 | 10 | 10 | 0 | 0 | 0 | |
| Workshop On Bridge Repair | 3 | 9-Jun-17 | 8 | 3 | 2 | | | | | 2 | 2 | 1 | | | | | | | | | | | | | 1 | | | | 6 | 25 | 0 | 0 | 25 | 0 | |
| Workshop On Bridge Repair | 3 | 12-Jun-17 | | | | | | | | | | | | | 2 | | 2 | 2 | | | | | | | | | | | 3 | 9 | 0 | 0 | 9 | 0 | |
| Workshop On Bridge Repair | 3 | 13-Jun-17 | | | | | | | | | | | | | 14 | 3 | | | 4 | 2 | | | | | | | | | | 23 | 0 | 0 | 23 | 0 | |
| Workshop On Bridge Repair | 3 | 14-Jun-17 | | | | | | 4 | 2 | | | | 2 | | | | | | | | | | | 3 | | | | | | 11 | 0 | 0 | 11 | 0 | |
| Workshop On Bridge Repair | 3 | 15-Jun-17 | | | | | | | | | | | | | | | | | | | 2 | | 9 | | | 2 | 2 | | | 15 | 0 | 0 | 15 | 0 | |
| 5th JCC | 4 | 23-Jun-17 | 18 | | | | | | | | | | | | | | | | | | | | | | | | | | 18 | 36 | 0 | 0 | 0 | 36 | |
| Maintainance Road Expert | 3 | 26-Jun-17 | 11 | | | | | | | | | | | | | | | | | | | | | | | | | | | 11 | 0 | 0 | 11 | 0 | |
| Workshop Bridge Inspection | 2 | 2-Aug-17 | 7 | 3 | 2 | 1 | 4 | 2 | | | | | | 1 | | | | | | | | | | | | 2 | | | 14 | 36 | 0 | 36 | 0 | 0 | |
| Workshop Bridge Inspection | 2 | 3-Aug-17 | 2 | 3 | 2 | 1 | | 2 | | | | | 2 | 1 | | | | | | | | | | | | 2 | | | 10 | 25 | 0 | 25 | 0 | 0 | |
| Workshop Bridge Inspection | 2 | 4-Aug-17 | 2 | 1 | 2 | 1 | | 2 | | | | | 2 | | | | | | | | | | | | | 2 | | | 12 | 24 | 0 | 24 | 0 | 0 | |
| Workshop Bridge Inspection | 2 | 8-Aug-17 | 4 | | | | | | | | | | | 4 | 2 | 2 | | | 5 | 2 | | | | | | | | | 4 | 23 | 0 | 23 | 0 | 0 | |
| Workshop Bridge Inspection | 2 | 9-Aug-17 | 3 | | | | | | | | | | | 2 | 3 | 2 | | | 3 | 2 | | | | | | | | | 5 | 20 | 0 | 20 | 0 | 0 | |
| Workshop Bridge Inspection | 2 | 10-Aug-17 | 3 | | | | | | | | | | | 1 | 3 | 2 | | | 3 | 2 | | | | | | | | | 5 | 19 | 0 | 19 | 0 | 0 | |
| 1st Project Review Meeting | 4 | 13-Sep-17 | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | 10 | 0 | 0 | 0 | 10 | |
| Report meeting Overload Enforcement | 2 | 5-Oct-17 | | | | | | | | | | | | | | | | | | | | | | | | | | | 5 | 5 | 0 | 5 | 0 | 0 | |
| Final Presentation of Overloading Enforcement at Tsubasa Bridge | 2 | 10-Oct-17 | | | | | | | | | | | | | | | | | | | | | | | | | | | 10 | 10 | 0 | 10 | 0 | 0 | |
| 3rd Bridge Inspection Workshop (Day 1) | 2 | 11-Oct-17 | 4 | | | | | 1 | | | | | | | | | 2 | 4 | | | | 1 | | | | | 2 | 3 | 17 | 0 | 17 | 0 | 0 | |
| 3rd Bridge Inspection Workshop (Day 2) | 2 | 12-Oct-17 | 4 | | | | | 1 | | | | | | | | | 2 | 3 | | | | 1 | | | | | 2 | 5 | 18 | 0 | 18 | 0 | 0 | |
| 3rd Bridge Inspection Workshop (Day 3) | 2 | 13-Oct-17 | 4 | | | | | 2 | | | | | | | | | 2 | 3 | | | | | | | | | 2 | 3 | 16 | 0 | 16 | 0 | 0 | |
| 4th Bridge Inspection Workshop (Day 1) | 2 | 18-Oct-17 | 4 | | | | | | | | | | | | | | | | | | 2 | | 10 | 2 | | 1 | 2 | 4 | 25 | 0 | 25 | 0 | 0 | |
| 4th Bridge Inspection Workshop (Day 2) | 2 | 19-Oct-17 | 4 | | | | | | | | | | | | | | | | | | 2 | | 7 | 2 | | 2 | 2 | | 19 | 0 | 19 | 0 | 0 | |
| 2nd Maintenance Operation | 1 | 11-Dec-17 | 5 | | | | | | | | | | | | | | | | | | | | | | | | | 6 | 11 | 11 | 0 | 0 | 0 | |
| 5th Bridge Inspection Workshop (1) | 2 | 13-Dec-17 | 3 | | | | | | | 2 | | 7 | | | | | | | | | | | | | 2 | | | 18 | 32 | 0 | 32 | 0 | 0 | |
| 5th Birdge Inspection Workshop (2) | 2 | 14-Dec-17 | 4 | | | | | | | 2 | | 4 | | | | | | | | | | | | | 2 | | | 13 | 25 | 0 | 25 | 0 | 0 | |
| 15th Bridge Inspection Workshop (3) | 2 | 15-Dec-17 | 5 | | | | | | | 2 | | 6 | | | | | | | | | | | | | 2 | | | 1 | 16 | 0 | 16 | 0 | 0 | |
| Final Bridge Inspection Seminar | 2 | 20-Dec-17 | 13 | 1 | | 1 | | 3 | | 2 | | 2 | | | | | 2 | 2 | | | 1 | | | 3 | 3 | 4 | | 1 | 58 | 96 | 0 | 96 | 0 | 0 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

# Annex 8 Plan of Operation

Form 3-3 Project Monitoring Sheet II (Revision of Plan of Operation)

Ver. 5

Dated: February 2018

Project Title: The Project for Strengthening Capacity for Maintenance of Roads and Bridges

| INPUTS | Expert in charge | Plan/ Actual | 2015 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2016 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2017 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2018 1 | 2 | 3 | Remarks | Monitoring Issue | Monitoring Solution |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Expert** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chief Advisor | OGAWA Koichi | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Team Leader / Bridge Maintenance Engineer | MIZOTA Yuzo | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Deputy Team Leader / Road Maintenance Planner | NAKAJIMA Takashi | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bridge Repair Engineer (1) (Plannning and Design) | TOKUMASU Ken | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bridge Repair Engineer (2) (Repairing Work Expert) | SUZUKI Hideyuki | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bridge Repair Engineer (3) | Tamagawa Dai | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bridge Inspection Engineer (1) | TSUKAMOTO Shigeaki | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bridge Inspection Engineer (2) | TSUJIMOTO Eichi | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Road Maintenance Engineer (1) | HEIMA Hiroyuki | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Equipment Procurement / Road Maintenance Engineer (1) | MAEDA Tatsuro | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Road Maintenance Engineer (1) | ONO Masazumi | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Road Maintenance Engineer (2) | IBAYASHI Kou | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Road Maintenance Engineer (2) | NAGAI Kohei | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Road Maintenance Engineer (3) | HAKAMADA Fumio | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bridge Maintenance Planner | WATANABE Masatoshi | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Database System Engineer | KUMAGAI Takahiro | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coordinator / Assistant for Road and Bridge Inspection | OHTAKE Hiroaki | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coordinator for other Relevant Project | YUMITA Kazuo | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Equipment** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Equipment for Pilot Project | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Training in Japan** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | ACTIVITIES | Expert in charge | Plan/ Actual | 2015 | | | | | | | | | | | | 2016 | | | | | | | | | | | | 2017 | | | | | | | | | | | | 2018 | | | Responsible Organization | | Achievements | Issue & Countermeasures |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | Japan | Cambodia | | |
| Output-1: The bridge maintenance cycle is established. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-1 | To review the present bridge maintenance cycle and the works of RID in comparison to the existing Japanese system | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-1-1 | To collect existing Data and analyze them with RID | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-1-2 | To study the cases of Japanese bridge maintenance cycle that be able to apply to Cambodia | Mizota / Tokumasu / Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-1-3 | To review the result and discuss with RID | Ogawa / Tokumasu / Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-2 | To propose 3 year bridge maintenance strategic plan with the annual action plan to establish a proper bridge maintenance cycle | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-2-1 | To draft the action plan with RID | Mizota / Nakajima/ Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-2-2 | To supervise "1.2.1 activities" and review with RID for final action plan | Ogawa / Mizota / Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-3 | To practice the action plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-3-1 | To supervise the action of RID and the other organization | Mizota/Nakajima/ Tokumasu/Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-3-2 | To supervise "1.3.1 activities" and evaluate it with RID | Ogawa /Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-4 | To hold workshops of the bridge maintenance cycle | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-4-1 | To prepare workshops and materials for the workshops and explain their part at workshops with RID | Nakajima/Tokumasu/ Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-4-2 | To organize the workshops and review the result with RID | Ogawa / Mizota / Nakajima / Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-5 | To prepare draft annual bridge maintenance budget | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-5-1 | To draft the maintenance budget of target DPWT | Mizota / Nakajima / Watanabe/Ono | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-5-2 | To draft the maintenance budget with RID | Mizota / Nakajima / Watanabe/Ono | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-5-3 | To supervise "1.5.2 activities" and review drafts with RID | Ogawa | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | ACTIVITIES | Expert in charge | Plan/ Actual | 2015 | | | | | | | | | | | | 2016 | | | | | | | | | | | | 2017 | | | | | | | | | | | | 2018 | | | Responsible Organization | | Achievements | Issue & Countermeasures |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | Japan | Cambodia | | |
| Output-2: Road and bridge inspection capacity of RID is enhanced. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-1 | To review and develop road maintenance manual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-1-1 | To review road maintenance manual with RID | Nakajima / Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-1-2 | To draft new road maintenance manual with RID | Nakajima / Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-1-3 | To supervise "2.1.1-2 activities" and review it with RID | Ogawa / Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-2 | To review and develop bridge maintenance manual, including a database framework | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-2-1 | To draft new bridge maintenance manual with RID | Tokumasu/ Tsukamoto/Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-2-2 | To supervise "2.2.1 activities" and review it with RID for finalizing bridge maintenance manual | Ogawa/Tokumasu/ Tsukamoto/Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-3 | To hold training workshops on road and bridge inspections | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-3-1 | To prepare workshops and materials for the workshops and explain their part at workshops with RID | Tokumasu/Tsukamoto/ Ohtake/Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-3-2 | To organize the workshops and review the result with RID | Ogawa/Tokumasu/ Tsukamoto/Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4 | For bridge, to inspect bridges and prepare rough cost estimation of the repair works for all DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4-1 | To prepare draft inspection plan for bridges with RID | Tokumasu/ Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4-2 | To implement bridge inspection with RID and DPWTs engineers at all the DPWTs | Tokumasu/ Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4-3 | To prepare rough cost estimation of the repair works for bridges with RID | Tokumasu/ Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-4-4 | To supervise "2.4.1-3 activities" and discuss with RID | Ogawa/ Mizota/ Tokumasu/Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-5 | For roads, to inspect roads using IRI and prepare rough cost estimation of the repair works at the target DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-5-1 | To prepare draft inspection plan for roads with RID | Nakajima/ Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-5-2 | To implement road inspection with RID and DPWTs engineers at the target DPWTs | Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-5-3 | To prepare rough cost estimation of the repair works for roads with RID | Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-5-4 | To supervise "2.5.1-3 activities" and discuss with RID | Ogawa/ Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-6 | To register the inspection results in the database by RID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-6-1 | To register the inspection results of roads with RID | Nakajima/ Ohtake | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-6-2 | To register the inspection results of bridges with RID | Tokumasu/Tsukamoto/ Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-6-3 | To supervise "2.6.1-2 activities" and review the result with RID | Ogawa/ Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-7 | To register the inspection results in the database by RID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-7-1 | To revise the road and bridge maintenance manual with RID | Mizota/Nakajima/ Tokumasu/Tsukamoto | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-7-2 | To prepare workshops and materials for the workshops and explain their part at workshops with RID | Mizota/Nakajima/ Tokumasu/Watanabe | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-7-3 | To organize the workshops and review the result with RID | Ogawa/Mizota / Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-8 | To conduct preliminary study on overloading control (at Tsubasa Bridge) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-8-1 | Overloading enforcement in foreign countries | Hakamada | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-8-2 | Countermeasures against overloading issue at Tsubasa Bridge | Hakamada | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| ACTIVITIES | | Expert in charge | Plan/ Actual | 2015 | | | | | | | | | | 2016 | | | | | | | | | | 2017 | | | | | | | | | | | | 2018 | | | Responsible Organization | | Achievements | Issue & Countermeasures |
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| | | | | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | Japan | Cambodia | | |
| Output-3. Road and bridge repair capacity of RID is enhanced. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-1 | To review and establish road repair manual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-1-1 | To review road repair manual with RID | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-1-2 | To draft new road repair manual with RID | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-1-3 | To supervise "3.1.1-2 activities" and review the result with RID for finalize repair manual | Ogawa / Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-2 | To review and establish bridge repair manual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-2-1 | To review bridge repair manual with RID | Mizota / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-2-2 | To draft new bridge repair manual with RID | Mizota / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-2-3 | To supervise "3.2.1-2 activities" and review the result with RID for finalize repair manual | Ogawa / Mizota / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-3 | To hold training workshops on road and bridge repairs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-3-1 | To prepare workshops and materials for the workshops and explain their part at workshops with RID | Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-3-2 | To organize the workshops and review the result with RID | Ogawa / Mizota / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-4 | To identify roads and bridges for the pilot repair works based on the inspection results at the target DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-4-1 | To prepare priority sites list of roads for the pilot repair works with RID | Mizota / Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-4-2 | To prepare priority sites list of bridges for the pilot repair works with RID | Mizota / Nakajima / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-4-3 | To identify roads and bridges for the pilot repair works with RID | Ogawa | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-5 | To establish repair plan for the identified roads and bridges at the target DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-5-1 | To draft repair plan for roads with RID | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-5-2 | To draft repair plan for bridges with RID | Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-5-3 | To review and finalize repair plan for the identified roads and bridges with RID | Ogawa /Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-6 | To repair the identified roads and bridges at the target DPWTs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-6-1 | To repair the identified roads with RID and DPWTs engineers at the target DPWTs | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-6-2 | To repair the identified bridges with RID and DPWTs engineers at the target DPWTs | Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-6-3 | To supervise "3.6.1-2 activities" and discuss with RID | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | ACTIVITIES | Expert in charge | Plan/ Actual | 2015 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2016 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2017 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2018 1 | 2 | 3 | Responsible Organization Japan | Cambodia | Achievements | Issue & Countermeasures |
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| 3-7 | To evaluate the above repair works | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-7-1 | To prepare evaluation report of the roads repair works with RID | Nakajima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-7-2 | To prepare evaluation report of the bridges repair works with RID | Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-7-3 | To supervise "3.7.1-2 activities" and review the result with RID | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-8 | To revise the road and bridge repair manual incorporating lessons learned from the above activities by organizing review workshop by organizing review workshop | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-8-1 | To draft revise version of road repair manual with RID | Mizota / Nakajima / Heima | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-8-2 | To draft revise version of bridge repair manual with RID | Mizota / Nakajima / Tokumasu | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3-8-3 | To supervise "3.8.1-2 activities" and review the result with RID for finalize revised repair manual | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | ACTIVITIES | Expert in charge | Plan/ Actual | 2015 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2016 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2017 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 2018 1 | 2 | 3 | Responsible Organization Japan | Cambodia | Achievements | Issue & Countermeasures |
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| Output-4. Road and bridge maintenance cycle is introduced to other DPWTs and concerning agencies. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-1 | To organize seminars for other DPWTs – trainings on road and bridge inspection | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-1-1 | To prepare seminars and materials for the seminars and explain their part at workshops with RID | Mizota / Nakajima / Yumita | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-1-2 | To organize the seminars and review the result with RID | Ogawa / Mizota / Yumita | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-2 | To organize seminars for other DPWTs – trainings on road and bridge Repair | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-2-1 | To prepare seminars and materials for the seminars and explain their part at workshops with RID | Mizota / Nakajima / Yumita | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-2-2 | To organize the seminars and review the result with RID | Ogawa/Mizota/ Nakajima/Yumita | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Actual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-3 | To organize the project wrap-up seminar for other DPWTs by RID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-3-1 | To organize the project wrap-up seminar for other DPWTs | Ogawa / Mizota | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Monitoring Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Kick-off Meeting | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Kick-off Meeting | Plan | ▲ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Actual | ▲22 May | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Joint Coordinating Committee | Plan | | | | ▲ | | | | | | | ▲ | | | | ▲ | | | | | | | | ▲ | | | | ▲ | | | | | | | | ▲ | | | | | |
| | | Actual | | | | ▲10 July | | | | | | | ▲18 January | | | | ▲10 August | | | | | | | | ▲15 December | | | | ▲23 June | | | | | | | | ▲5 Feb(Joint Review) | | | | |
| | Revision of PDM from Version zero to one. | Plan | ▲ | | | | | | | | | | | | ▲ | | | | | | | | | | | | ▲ | | | | | | | | | | | | | | | |
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| | Submission of Monitoring Sheet | Plan | | | | ▲ | | | | | | | | ▲ | | | | ▲ | | | | | | | | ▲ | | | | ▲ | | | | | | | | | | | | |
| | | Actual | | | | ▲10 July | | | | | | | | ▲12 February | | | | ▲4 August | | | | | | | | ▲20 December | | | | ▲28 June | | | | | | | | | | | | |
| Reports/Documents | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Final Report | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ▲ | | | | |
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| Evaluation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Terminal Evaluation | Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ▲ | | | | | | | | | | |
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