

Minutes of the Workshop 12 (A3-WS2)
Bridge Management Capacity Development Project

Date March 27, 2016 10:10-12:00
Venue Chief Engineer's Conference Room, RHD, Sarak Bhaban, Tejgaon.
Chaired by Mr. Parimal Bikash Sutradhar
Additional Chief Engineer, Bridge Management Wing, RHD
Project Director, Bridge Management Capacity Development Project.
Participants Attendance sheet attached

1. **Opening Address** : The goals of the Project including the importance for developing an internet & intranet based Bridge Management Systems (BMS) for bridge maintenance management and to ensure the necessary budget for remedial and rehabilitation works to keep the bridges in good condition had been focused by the Project Director.
2. **Explanation of Reference: 160326_BMS_WS12- "Requirement Definition Draft of Bridge Management System"**.
 - A. JICA Consultant Mr. KENGO MAKISHIMA presented and explained the followings:
 - a) Schedule to construct BMS
 - b) Type of Data, Input Sheet, and Output List/Report
 - c) Function to Improve Usability of BMS
 - d) Inputted Item in BMS
 - B. JICA Consultant Mr. OHNO KANJI presented and explained the followings:
 - a) BMS Flow Chart
 - C. System Manager of JICA Project Team Mr. Md. Mahmud Hossain presented and explained the followings:
 - a) Types of Users, Their Roles and Authority in BMS
 - What **Inspector** can do in BMS
 - What **Evaluator** can do in BMS
 - What **RHD Administrative Officials** can do in BMS
 - What **RHD Administrative Staffs** can do in BMS
 - What **Public Users** can view in BMS
 - What **BMS Operator** can do in BMS
 - What **Data Cross Checker** can do in BMS
 - What **BMS Administrator (Super-Admin)** can do in BMS

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D. Discussions on above mentioned Topics

a) Category and Degree in BMS

- Rating of Defects: Rating of defects will be scored for each element by inspection. The defects will be categorized by "a to e". Reference - Inspection Manual.
- Evaluation Category: Evaluation category is set as "Ae to De" where "e" means 'element'. After inspection the evaluator inputs this evaluation category in BMS. But "e" may raise confusion. So, it was discussed to use small "t" instead of "e". As an example "At, Bt, Ct, Dt" was proposed in place of "Ae, Be, Ce and De" respectively where "t" means type. Another proposal was raised to use "et" as suffix with Evaluation Category like "Aet, Bet, Cet, Det" where "e" means element and "t" means "type". Setting evaluation category in this way may not look good as there are 3 characters for each type of evaluation category; e.g "Aet" has 3 characters. It will be finalized after further discussion.
- Evaluated Degree: For each element type the evaluated degree was discussed as 0, 33, 67, 100 for Ae, Be, Ce, De respectively. It has to be identical and similar with other manuals and presentations in workshop. JICA Team will sit together and finalize the degrees.
- For each bridge the Damage Degree, Importance Degree and Priority to Remedy was described as 0 to 100. And the whole Bridge Condition Category will be set as A to D according with range of Damage Degree.
- As the Categories and Degrees are variables there should be an options in super-admin level to change it when necessary.

b) Schedule to Construct BMS

- By mid of April 2016 requirement gathering has to be completed. This time line is very important.

c) Types of Output list of BMS

- The main outputs will be 'Bridge Inspection Report', 'Bridge Evaluation Report', 'Rough Cost Evaluation Report', 'Integrated Evaluation List', 'Integrated Remedy List', and 'Bridge Basic Data Sheet'. Other outputs will be determined by further discussion.

d) Functions to Improve Usability of BMS

- Inspection sheet for each bridge can be generated from BMS. Inspector prints this sheet, do the inspection and mark the results into the sheet for further entry into BMS. Discussions were made on the use of "Machine Readable" Inspection Sheet, which is very similar to the 'Multiple Choice Question Answer Sheet' used in Bangladesh. The user will fill the circle with dark pencil, put into the machine and machine will recognize the inspection results. It needs further discussions to include in the scope of BMS.

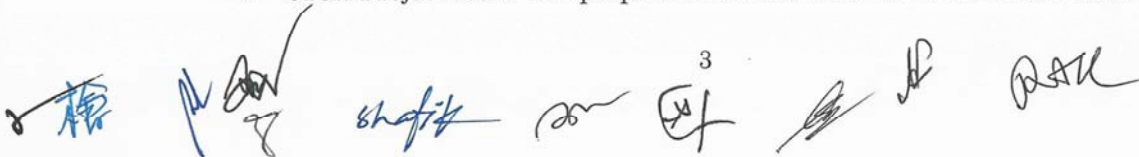
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e) Input Items in BMS

- Basic data will be correct, informative and sufficient. If required support can be taken from existing BMMS. Moreover to complete all basic information further manual entry may be required. The basic data was proposed as constant and not changeable. But it is required to keep an option for changing data at the time of future upgrades and updates.
- For Bridge Basic Data all Bridge types have to be included. To determine the Bridge types and data types it needs more discussions.
- Connecting Road Inspection Data will not be included in BMS's current scope. Only the connecting road identification information like road name/number will be recorded in bridge basic data.
- Inspection types should be determined and the BMS should have options to create Emergency Inspection.
- If Structural Safety Box is checked, Bridge damage degree should be maximum.
- Importance of the road & Bridge importance degree – there should be an option in the super-admin to change it with the consent of competent authority of RHD.
- In Bridge basic data entry form there is an option to input Crossings under Bridges. Road numbers should be included for Crossings under bridge.
- For Traffic Volume there should be another pane of more than 10 thousands.
- Development of a standard list of coefficients will be discussed in next workshops.
- There should be another input field "Others" to estimate the rough cost.
- Coefficient standard and basis of standard will be discussed in next workshop.
- BMS should have options to change coefficients in future.
- BMS should have the options to change unit cost.
- There is no coefficient standard in Japan. Their municipality decides with some research and analysis.
- For public safety checkbox - what is the points of 'YES' and 'NO'? What is the scope it needs to be determined in the BMS? If public safety is checked (putting a tick mark in the box) then bridge damage degree will be maximum. Because public safety means the defects are dangerous for public.

f) Types of Users, Their Roles and Authorities

- Discussed about the activities of 8 types of users in BMS – 1) Inspector, 2) Evaluator, 3) RHD Administrative Official 4) RHD Administrative Staff, 5) Public Users, 6) BMS Operator, 7) BMS Data Cross Checker and 8) BMS Administrator.
- JICA Project team will prepare a flowchart for all RHD offices for all the above



roles. The flowchart should relate the users with the current RHD inspection process.

g) Other Discussions

- RHD will provide answers of any questions that are needed for BMS.

3. Next WS Schedule

Next Workshop on Bridge Maintenance Management Standard is scheduled to be at 12:30 PM on March 27, 2016 (Sunday).

The Chairperson ended the workshop with thanks to all for their fruitful discussions and wished successful and timely completion of the project.

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Date : March 27, 2016

Peoples Republic of Bangladesh / Japan International Cooperation Agency (JICA)

Bridge Management Capacity Development Project

Workshop 12 (A3-WS2)

ATTENDANCE SHEET

	Name	Belongings	Signature
1		ACE, BMW, RHD	
2		S.E. PLD, APD, BMCDP	
3		Team leader of JICA Consultant	
4		EE, RHD, BMMS DIVISION	
5		EE, RHD, Habiganj	
6		EE, RHD, Barisal	
7		EE, RHD, Comilla	
8		EE, RHD, RAJSHAHI	
9		SDE, RHD, BMMS sub-division	
10		JICA Project Team	
11		JICA Project Team	
12		— " —	
13		JICA Project Team	
14		JICA Project Team	
15		Managing Director Atan AP Ltd	
16		Director Atan AP Ltd	
17		JICA Project Team	
18		JICA Project Team	
19		JICA Project Team	
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Minutes of the Workshop13 (A1-WS6)
-Bridge Management Capacity Development Project-

Date March 27, 2016 12:30-13:45
Venue Chief Engineer's Conference Room, RHD, Sarak Bhaban, Tejgaon.
Chaired by Mr. Parimal Bikash Sutradhar
Additional Chief Engineer, Bridge Management Wing, RHD
Project Director, Bridge Management Capacity Development Project.
Participants Attendance sheet attached

1. **Opening Address** : The goals of the Project including the importance for developing an up to dated Bridge Maintenance Management Standard and the necessity of practicing that standard in both field and central level of RHD for most efficient bridge management had been addressed in welcoming speech by the Project Director.
2. **Explanation of Reference**: WS13 (A1-WS6) - "Bridge Maintenance Management Standard (Draft) (Ver. 1)".

A. JICA Consultants' Team Leader Mr. Yoshimitsu HIYAMA presented and explained the followings.

- a) Development of Short-Term and Medium-Term Maintenance Plan
- b) Development of Long-Term Maintenance Plan
- c) Bridge Maintenance Institutional Framework and Staff Deployment
 - i. Institutionalization of Bridge Inspection
 - ii. Permanent Standing of Bridge Inspection Team
 - iii. Increase/enhancement of manpower in field level organogram
- d) Security of Maintenance Fund
 - i. Cost Saving due to Preventive Maintenance
 - ii. Mobilization of Road Fund
 - iii. Separation of Routine Maintenance and PMP Minor Budget.

B. Summary of Discussions on above mentioned topics

- a) Development of Short-Term and Medium-Term Maintenance Plan
 - To establish bridge maintenance plan, the most important issue is to introduce preventive maintenance and asset management. RHD has not yet introduced preventive maintenance clearly for the maintenance of the bridges and culverts.
 - Consultants have proposed 4(four) policies for the implementation of preventive maintenance of the bridges. Those are as follows:
Policy 1: Remedial measures for the bridges and culverts of category 'D' should be



commenced first.

Policy 2: Remedial measures for the bridges and culverts of category 'C' come after the completion of remedial works of category 'D'.

Policy 3: Preventive maintenance is applied to the bridges and culverts of category 'A' & 'B' to reduce the expenditure in near future. For these remedial works, routine maintenance and PMP minor budget are applied.

Policy 4: After the completion of remedial works of category 'C' & 'D' bridges and culverts, full-fledge preventive maintenance and asset management starts.

- Consultants also proposed the workflow of bridge maintenance plan. Details will be included in the manual.
- For the proper implementation of Short-Term and Medium-Term maintenance plan, the boundary between PMP major works and PMP minor works should be very clear. This boundary is not clear in RHD.
- If any material or other item requires for bridge repair/maintenance does not exist in RHD's present schedule of rates, it should be added in future. If required, RHD should compile a totally new schedule of rates with the inclusion of all the materials suggested by the consultants for bridge rehabilitation and strengthening.

b) Development of Long-Term Maintenance Plan

- Long-Term Maintenance Plan helps to get the best output from a bridge/culvert by keeping the Life Cycle Cost at the lowest possible level. Many factors related to the bridge such as Economic Internal Rate of Return (EIRR), deterioration prediction, budget limitation and the service life of countermeasures are analyzed thoroughly prior to set up Long-Term plan. Details will be included in the manual.
- Application of preventive maintenance for category 'A' & 'B' and symptomatic maintenance for category 'C' & 'D' can be practiced at early level of adopting Long-Term maintenance plan.

[Technical Terminology]

Preventive maintenance is such maintenance approach at which defects are treated at early stage of their origin so that its future progress can be stopped and the effect of the defect on the structure can be minimized.

Symptomatic maintenance is such maintenance approach at which defects are treated after they have propagated enough, already had some visible effects on the structure and if kept untreated they will cause more damage. Generally, symptomatic maintenance costs more than preventive maintenance.



- Consultants have presented the work flow chart of Long-Term Maintenance Plan. It will be included in the manual.

c) Bridge Maintenance Institutional Framework and Staff Deployment

- Consultants made three recommendations. Those are (i) Institutionalization of Bridge Inspection; (ii) Establishment of Permanent Bridge Inspection Team and (iii) Increase/ enhancement of manpower in field level organogram.

i. **Institutionalization of Bridge Inspection:** It seemed that RHD do not conduct bridge inspection on regular basis. They conducted inspection for all the bridges and culverts in 2004 and for all the bridges except culverts under EBBIP in 2013. In between, for ten years all the bridges and culverts were kept uninspected. This type of practice is a great obstacle on the way of implementing standard bridge maintenance system. For implementing the standard bridge maintenance system, RHD must inspect the bridges and culverts on regular basis as an institutional rule.

ii. **Establishment of Permanent of Bridge Inspection Team:** RHD have to inspect a lot of bridges and culverts continuously which is a huge load of work. For the time being RHD may have formed an inspection team in each sub-division, but for continuous inspection, fixation of inspection team is required. It is suggested that a bridge inspection teams would be fixed as an organizational units and the inspectors will always grasp the condition of bridges and culverts under their jurisdiction.

iii. **Increase/enhancement of Local Organization:** It seems that the number of bridges and culverts under all the sub-divisions are not equal; some sub-divisions manage more than 300 bridges and culverts while some manage less than 100. To eradicate this imbalanced work load, two alternatives are proposed (1) deploy more than one teams in the subdivisions which manage more bridges than average, number of teams will depend on the number of bridges and culverts under their jurisdiction; (2) divide the subdivisions into many in such a way that they will have to manage almost equal to the average number of bridges and culverts.

- Number of bridges and culverts also affect the repair work volume. At present, RHD do not conduct much repair works; mostly they do replacements which are outsourced. When preventive maintenance will be adopted they will have to do a lot of repair works, which will demand more manpower. RHD must decide how to remove the imbalance of workload among the subdivisions.
- Outsourcing could be another option if in-house human resource is scarce.



d) Security of Maintenance Fund

➤ Consultants made three recommendations. Those are (i) Cost Saving due to Preventive Maintenance, (ii) Mobilization of Road Fund and (iii) Separation of Routine Maintenance and PMP Minor Budget.

i. **Cost Saving due to Preventive Maintenance:** Economic effect of Preventive Maintenance is written in Road Master Plan (RMP) 2009. With the help of the calculations of RMP it can be shown that the benefit of preventive maintenance surpasses the budget of PMP major (bridge) of 2015 fiscal year (escalation of commodity price is considered in this analysis). It is recommended to introduce preventive maintenance in RHD as early as possible.

ii. **Mobilization of Road Fund:** Bangladesh has road funds but not mobilized yet. It is the key to get the optimum output of Short-Term, Medium-Term and Long-Term bridge maintenance plan. It is recommended to mobilize the road fund as early as possible.

iii. **Budget Separation of Routine Maintenance and PMP Minor:** Routine maintenance and PMP minor budget are allocated together for roads and bridges. Considering the actual condition of routine maintenance, it is unclear if these budgets are utilized properly for bridge maintenance. Therefore it is recommended to separate the budget for bridges and culverts from the budget for roads. Rough estimation based on BMMS data showed that if 25% of Routine Maintenance and PMP minor budget of 2015 fiscal year is used, all the bridges and culverts of category 'B' will be repaired in one year. If same practice is continued, gradually all the bridges will be repaired and RHD will be able to apply preventive maintenance for all the bridges and culverts in near future.

3. Next WS Schedule

Next Workshop on Bridge Maintenance Management Standard is scheduled to be held at 10:00 AM on April 10, 2016 (Sunday).

The Chairperson ended the workshop with thanks to all for their fruitful discussions and wished the success of the project within the scheduled time.



Date : March 27, 2016

Peoples Republic of Bangladesh / Japan International Cooperation Agency (JICA)

Bridge Management Capacity Development Project

Workshop 13 (A1-WS6)

ATTENDANCE SHEET

	Name	Belongings	Signature
1		ACE, BMW, RHD	
2		SE, RHD, APD, BMCD	
3		EE, RHD, BMMS Division	
4		EE, RHD, Habiganj Road Division	
5		EE, RHD, Barisal	
6		EE, RHD, Comilla	
7		EE, RHD, RAJSHAHI	
8		SDE, RHD, BMMS Sub-division	
9		BMMS, JICA Project Team	
10		JICA Project Team	
11		JICA Project Team	
12			
13			
14		JICA Project Team	
15		Team Leader JICA Project Team	
16		JICA Project Team	
17		JICA Project Team.	
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Minutes of the Workshop 14 (A2-WS6)
-Bridge Management Capacity Development Project-

Date April 10, 2016 10:05-11:55
Venue Chief Engineer's Conference Room, RHD, Sarak Bhaban, Tejgaon.
Chaired by Mr. Parimal Bikash Sutradhar
Additional Chief Engineer, Bridge Management Wing, RHD
Project Director, Bridge Management Capacity Development Project.
Participants Attendance sheet attached

1. **Opening Address** : The goals of the project including the importance for developing a standard Bridge Inspection Manual and application of that manual for most efficient bridge maintenance management system had been addressed by the Project Director.
2. **Explanation of Reference**: WS14 (A2-WS6)-“Development of Bridge Inspection and Evaluation Manual”.
 - A. JICA Consultant Mr. Ikuo HARAZAKI presented and explained the followings.
 - a) Draft Contents of the Manual
 - b) Chapter 1: Background
 - c) Chapter 2: Introduction
 - d) Chapter 3: Bridge Inspection Program
 - e) Chapter 4: Procedure of Inspection
 - f) Chapter 5: Types and Condition of Defects
 - g) Chapter 7: Inspection Records
 - B. Summary of discussions on above mentioned topics
 - a) Draft Contents of the Manual
 - The Manual has 7(seven) chapters and 9(nine) appendices.
 - Chapter 4 and Chapter 6 were covered mostly in Workshop 10 and Workshop 11 respectively. Remaining part of Chapter 4(Work Flow of Periodic Inspection and Emergency Inspection) was covered in this workshop and the same of Chapter 6 will be covered in Workshop 15.
 - b) Chapter 1: Background
 - Brief history of bridge inspection in RHD, some limitations of present bridge inspection manual (Bridge Condition Survey Manual – 2014) and requirement of applying new techniques in bridge inspection for the most efficient bridge maintenance management has been discussed in this chapter.
 - c) Chapter 2: Introduction
 - The objectives, scope and relationship of this manual with intranet based Bridge

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Management System (BMS) have been discussed in this chapter.

d) Chapter 3: Bridge Inspection Program

- The types of bridge inspection have been revised according to the comments in earlier workshops. Newly proposed inspection types are (i) Surveillance Patrol in 1(one) month interval; (ii) Routine Inspection in 6(six) months interval; (iii) Periodic Inspection in 2(two) years interval; (iv) Emergency Inspection & (v) Detailed Investigation as required. Team arrangement for different types of inspection was also proposed.
- Alternative options proposed for the sub-divisions having more than average number of bridges to carry out “Periodic Inspection” are – (i) Increase of inspection team;
(ii) Extension of Inspection work period;
(iii) Cooperation with the adjacent sub-division and
(iv) Outsourcing.
- Tentative job schedule is proposed as 2(two) days for bridge inspection, 1(one) day for evaluation and 2(two) days for other works in a week for Senior Inspector (SDE) in the sub-division level.
- It might not be possible to implement such schedule in the field based on the existing system and resources; in response, however if it's not possible, it will be revised in future, but for now it is accepted as a good idea.

e) Chapter 4: Procedure of Inspection

- Most of this chapter has been presented earlier. Only “4.3 Performing the inspection” was presented in this workshop.
- The title “Detailed Work Procedure” should be “Detailed Work Flow” of Periodic and Emergency Inspection.
- “Measure” should be “Inspection” in step 2 & 3 of “Detailed Work Procedure of Emergency Inspection”.
- “Input into Database” should be included after the implementation of remedial action in the “Detailed Work Procedure” of Periodic and Emergency Inspection.
- More detailed information about bridge inspection will be presented in Appendix-5 in the next workshop.

f) Chapter 5: Types and Condition of Defects

- “5.3 Types of Defects and Rating” was covered in workshop 6. “5.1 Types of Bridges” and “5.2 Bridge Components and Elements” were presented in this WS.
- Some terms of Bridge Condition Survey Manual – 2014 have been changed such as RCC (Reinforced Cement Concrete) is changed to RC (Reinforced Concrete); “Slab Culvert” is changed to “Small Slab Bridge” and “Steel Beam and RCC Slab Bridge” is changed to “Steel Girder Bridge”.



g) Chapter 7: Inspection Records

- Inspection recording includes "Bridge Inventory Record" and "Inspection Record". For this purpose, Bridge Inventory Form, Bridge Inspection Form and Bridge Evaluation Form are presented in Appendix-9.
- Bridge Inventory Record contains general structure description, geometry and data on dimensions, traffic characteristics, drawings and photographs of the bridge.
- "Traffic volume" will come from "Census" as mentioned in the upper box, bridge inspectors do not have to observe traffic. This data will be updated only after the census. If traffic survey is needed it is to be done separately from bridge inspection.
- Bridge Inspection Forms are different for Routine Inspection and Periodic Inspection. This form includes defect photos and figures, and element numbering sheet for periodic inspection form.
- "Beginning" and "End" points of the bridge are determined according to "chainage" of the road. Numbering of elements will be from "left" to "right".
- It is possible to set a link between RMMS and BMS if required.

3. Next WS Schedule

Next Workshop on Bridge Evaluation Manual is scheduled to be at 12:10PM on April 10, 2016 (Sunday).

The Chairperson ended the workshop with thanks to all for their fruitful discussions and wished the success of the project within the scheduled time.

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Date : April 10, 2016

Peoples Republic of Bangladesh / Japan International Cooperation Agency (JICA)

Bridge Management Capacity Development Project

Workshop 14 (A2-WS6)

ATTENDANCE SHEET

	Name	Belongings	Signature
1		ACE, BMW, RHD	
2		SE, RHD, PLO Circle ADD, BMCDP	
3		EE, RHD, BMMS DIVISION	
4		GE, RHD, Barisal Road Division	
5		EE, RHD, Habiganj Road Division	
6		EE, RHD, Comilla Road Division	
7		EE, RHD, Rajshahi Road Div.	
8		SDE, RHD, BMMS sub-division	
9		JICA Bangladesh Office	
10		JICA Expert	
11		BMCDP Consultant Team	
12		JICA Project Team	
13		JICA Project Team	
14		JICA Project Team	
15		JICA Project Team	
16		JICA Project Team	
17		JICA Project Team	
18		JICA Project Team	
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Minutes of the Workshop15 (A2-WS7)

-Bridge Management Capacity Development Project-

Date April 10, 2016 12:10 – 13:20
Venue Chief Engineer's Conference Room, RHD, Sarak Bhaban, Tejgaon.
Chaired by Mr. Parimal Bikash Sutradhar
Additional Chief Engineer, Bridge Management Wing, RHD
Project Director, Bridge Management Capacity Development Project.
Participants Attendance sheet attached

1. **Opening Address** : The goals of the Project including the importance for developing a standard Bridge Evaluation Manual and the application of that manual to evaluate field inspection data for the assessment of bridge condition so that timely action can be taken for repair or rehabilitation of the bridge had been addressed by the Project Director.

2. **Explanation of Reference: WS15 (A2-WS7) - "Development of Bridge Evaluation Manual"**.

A. JICA Consultants Mr. Toshiyuki KONISHI presented and explained the followings.

- a) Bridge and Culvert Type
- b) Naming of Evaluation Category (Evaluation of Bridge Element Types)
- c) Unification of Naming (Evaluation of Entire Bridge)
- d) Impact Level (Evaluation of Entire Bridge)

B. Summary of Discussions on above mentioned topics

a) Bridge and Culvert Type

- 19 types of Bridge and Culverts were proposed to be included in the new manual instead of 13 types in Bridge Condition Survey Manual – 2014.
- RCC (Reinforced Cement Concrete) is replaced by RC (Reinforced Concrete) such as RCC Slab/Girder Bridge will be RC Slab/Girder Bridge.
- Although the term "Bailey" is used in many countries for steel bridges, it is better to keep the title "Portable Steel Bridge (PSB)" since RHD has different types of "Bailey" and other types of steel bridges which are totally different in structural configurations.
- Culvert was defined clearly; a rectangular box shaped drainage structure (bridge structure with bottom slab) will be called Box Culvert, a pipe shaped drainage structure across the road and beneath the road surface is pipe culvert. Structures without bottom slab are bridge regardless of span length. So "Slab Culvert" (BCS Manual – 2014) which does not have bottom slab will be categorized as "Slab Bridge".



- It was suggested to include "Pipe Culverts" in "Bridge Inspection" & BMS and to present the methods of inspecting pipe culverts.

b) Naming of Evaluation Category (Evaluation of Bridge Element Types)

- Condition Category of Bridge Element types will be denoted by A_t, B_t, C_t, D_t where "t" indicates type of element.
- In case of Box Culvert, deck slab is considered as main girder during inspection.
- "Wing wall" will be added as "retaining wall adjacent to abutment/wing wall" in the inspection sheet for Box Culvert.
- "Other defects" will be added in the inspection sheet to consider/include rare type of defect if found during the inspection which is not listed in the manual.

c) Unification of Naming (Evaluation of Entire Bridge)

- Since it was suggested to use same name everywhere of bridge evaluation in earlier workshops. But it seemed that the unified name of evaluated bridge condition scores and points as "Degree" did not work very well in every case.
- Therefore it was proposed to use "Degree" for 0~100 and "category" for A~D.

d) Impact Level (Evaluation of Entire Bridge)

- 50% impact of superstructure, 30% impact of substructure and 20% impact of bearings were proposed in calculation of the damage degree of the entire bridge with bearings.
- On the other hand, 60% impact of superstructure and 40% of substructure for calculating the condition of entire bridge structure without bearing. As the problems of Box Culverts are mostly related to substructure, it was proposed that substructure should have more impact.
- However, since RHD has not applied these types of equations and coefficients before, the proposed values can be used as trial. After applying these in OJT and field level inspection and evaluation of bridge structures, revision will be made if necessary. Moreover, these coefficients are not fixed; these can be revised at any time if situation demands.

3. Next WS Schedule

Next Workshop on Bridge Maintenance Management Standard is scheduled to be at 01:45 PM on April 10, 2016 (Sunday).

The Chairperson ended the workshop with thanks to all for their fruitful discussions and wished the success of the project within the scheduled time.



Date : April 10, 2016

Peoples Republic of Bangladesh / Japan International Cooperation Agency (JICA)

Bridge Management Capacity Development Project

Workshop 15 (A2-WS7)

ATTENDANCE SHEET

	Name	Belongings	Signature
1		ACE, BMW, RHD	
2		JICA Bangladesh Office	
3		JICA Expert	
4		BMCDP Consultant Team	
5		SE. RHD. RPD. BMCDP	
6		EE, RHD, BMMS DIVISION	
7		EE, RHD, Banisal Road Division	
8		EE, RHD, Haliganj Road Division	
9		EE, RHD, Comilla Road Division	
10		EE, RHD, Rajshahi Div	
11		SDE, RHD, BMMS Sub-division	
12		JICA Project Team	
13		JICA Project Team	
14		— — —	
15		JICA Project Team	
16		JICA Project Team	
17		"	
18		"	
19			
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Minutes of the Workshop16 (A1-WS7)
-Bridge Management Capacity Development Project-

Date April 10, 2016 13:50-14:25
Venue Chief Engineer's Conference Room, RHD, Sarak Bhaban, Tejgaon.
Chaired by Mr. Parimal Bikash Sutradhar
Additional Chief Engineer, Bridge Management Wing, RHD
Project Director, Bridge Management Capacity Development Project.
Participants Attendance sheet attached

1. **Opening Address** : The goals of the Project including the importance of enhancement of technical ability for developing a Bridge Maintenance Management Standard and the necessity of practicing the standard in both field and central level for most efficient bridge management system had been addressed by the Project Director.
2. **Explanation of Reference: WS16 (A1-WS7) - "Bridge Maintenance Management Standard – 2016: Enhancement of Technical Ability"**.
 - A. JICA Consultants' Team Leader Mr. Yoshimitsu HIYAMA explained the followings.
 - a) Significance of Enhancement of Technical Ability
 - b) Methodology of Enhancement of Technical Ability
 - i. Internal Activities
 - ii. Other Activities
 - B. Summary of discussions on above mentioned topics
 - a) Significance of Enhancement of Technical Ability
 - Technical ability is one of important inputs required to run bridge maintenance management cycle.
 - For enhancement of technical ability, many steps are taken in this project such as preparation of standard/manuals, electronic data system (BMS), providing non-destructive equipment, recommendations for organization of manpower, recommendations for proper financing and knowledge sharing.
 - Recommendations for organization of manpower are (i) Formation of Inspection Team in every Sub-division, (ii) Increase of number of Sub-divisions.
 - Recommendations for proper financing are (i) Early introduction of Preventive Maintenance, (ii) Early mobilization of Road Fund and (iii) Separation of Routine Maintenance Budget (Bridge) and PMP Minor Budget (Bridge) from Routine Maintenance Budget and PMP Minor Budget. Consultants suggested to allocate 25% of these budget only for bridges to start preventive maintenance.

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- Consultant will develop the manuals and BMS by consulting the core members through 23 workshops among which 16 (including this one) have already been conducted. In the workshops consultants shared their knowledge and experiences of bridge maintenance related issues with the core members and answered the questions from them.
- 75 Master Trainers will be trained through On the Job Training (OJT) which is supposed to commence from October, 2016. The purposes of OJT are (i) To enhance Master Trainers' technical ability so that they can train their subordinates, (ii) To establish hierarchal training system.
- Enhancement of technical ability is the key to make the system sustainable.

b) Methodologies of Enhancement of Technical Ability

i. Internal Activities

- For the inheritance of technical ability, various activities are to be taken such as providing training, arranging seminar, workshops, OJT etc. for the in-house personnel of RHD.
- Details of these items will be included in the standard (manual).

ii. Other Activities

- It would be desirable to widespread the knowledge among the other people.
- Seminars, Trainings and Lectures with public bodies can be arranged. Invitation of excellent engineers or professors from inside or outside the country is appreciated.
- Joint research and study with universities regarding new materials and repair methods. Dispatch of lectures in seminars, meetings, conferences and universities.
- Consultant showed a picture of model bridge for Bridge Inspection Training in Nagoya University, Japan which is made of removed parts of old and damaged bridges. This type of facilities can be established in Bangladesh Road Research Laboratory (BRRL) or in any university.

3. Next WS Schedule

Next Workshop on Bridge Maintenance Management Standard is scheduled to be held at 02: 30 PM on April 10, 2016 (Sunday).

The Chairperson ended the workshop with thanks to all for their fruitful discussions and wished the success of the project within the scheduled time.

2

Date : April 10, 2016

Peoples Republic of Bangladesh / Japan International Cooperation Agency (JICA)

Bridge Management Capacity Development Project

Workshop 16 (A1-WS7)

ATTENDANCE SHEET

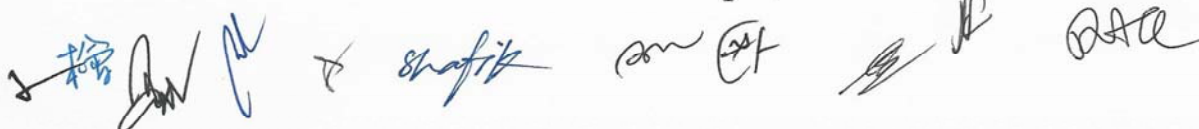
	Name	Belongings	Signature
1		ACE, BMW, RHD	
2		JICA Bangladesh office	
3		JICA Expert	
4		SEPTD, ATD, BMCDP	
5		EE, RHD, BMMS DIVISIONS	
6		EE, RHD, Barisal Road Division	
7		EE, RHD, Comilla Road Division	
8		EE, RHD, Rajshahi	
9		—	
10		—	
9 11		JICA Project Team	
10 12		JICA Project Team	
11 13		JICA Project Team	
12 14		—	
13 15		JICA Project Team	
14 16		BMCDP Consultant Team	
15 17		JICA Project Team	
16 18		JICA Project Team	
19			
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4/20/16
11

Minutes of the Workshop17 (A1-WS8)
-Bridge Management Capacity Development Project-

Date	April 10, 2016 14:30-15:45
Venue	Chief Engineer's Conference Room, RHD, Sarak Bhaban, Tejgaon.
Chaired by	Mr. Parimal Bikash Sutradhar Additional Chief Engineer, Bridge Management Wing, RHD Project Director, Bridge Management Capacity Development Project.
Participants	Attendance sheet attached

1. **Opening Address** : The goals of the Project including the importance for developing Bridge Maintenance Management Standard and the necessity of practicing the standard in both field and central level for building durable bridges by most efficient bridge management system had been addressed in welcoming speech by the Project Director.
2. **Explanation of Reference: WS17 (A1-WS8) - "Bridge Maintenance Management Standard; Part 5 : Recommendations for Creating Durable Bridges"**.
 - A. JICA Consultants' Team Leader Mr. Yoshimitsu HIYAMA explained the followings.
 - a) 5.1 Planning of Durable Bridges
 - b) 5.2 Design of Durable Bridges
 - B. Summary of discussions on above mentioned topics
 - a) 5.1 Planning of Durable Bridges
 - Location of the bridge should be such that the place is least prone to bank erosion and foundation scouring.
 - Footing of the Abutments should be below the estimated scouring depth.
 - Number of substructures in the river should be reduced to avoid damages caused by flood and water flow.
 - These topics are included in earlier version of bridge maintenance manual of RHD; these issues are not directly related to bridge maintenance but indirectly affect a lot.
 - These can be added in the manual as appendix but these should not be the final recommendation since the manual is of bridge maintenance, so the final recommendation should be directly related to bridge maintenance.
 - b) Design of Durable Bridges
 - In case of "without scour protection" and "without prediction of scouring depth" the riverbed depth over footing would be over 2 meters to reduce the effect of scouring.
 - As the countermeasure against settlement of backfill, the length of approach slab



will be 5m or 8m depending on the ground and abutment height.

- Maintenance facilities must be included in the design phase of the bridge. These facilities are used for bridge inspection and repair.
- Honeycomb during construction is one of the most encountered causes of bridge damage; one of the causes of honeycomb is high density of rebar. If rebar density can be reduced, possibility of honeycomb is also reduced. Another cause is over compaction during construction.
- A record plate can be pasted on the surface of the girder or an abutment containing the information of Bridge Name, Construction Year, Owner, Bridge Type, Design Standard, Design Load, Design Company, Construction Company etc.
- Most important thing for bridge protection is stopping water intrusion. Taking measures against water intrusion in the design stage is also important.
- Most of the defects arise from construction deficiency, so extra care must be taken to ensure the quality of the construction.

3. Next WS Schedule

Next Workshop on development of Bridge Rehabilitation and Strengthening Manual is scheduled to be held at 10:00 AM on May 22, 2016 (Sunday).

The Chairperson ended the workshop with thanks to all for their fruitful discussions and wished the success of the project within the scheduled time.



Date : April 10, 2016

Peoples Republic of Bangladesh / Japan International Cooperation Agency (JICA)

Bridge Management Capacity Development Project

Workshop 17 (A1-WS8)

ATTENDANCE SHEET

	Name	Belongings	Signature
1		ACE, BMW, RHD	
2		SE, RHD, APD, BMCDP	
3		EE, RHD, BMMS DIVISION	
4		EE, RHD, Barisal Road Division	
5		EE, RHD, Comilla Road Div.	
6		EE, RHD, Rajshahi Div.	
7		JICA Bangladesh Office	
8		JICA Expert	
8		—	
10		—	
9/18		JICA Project Team	
10/18		JICA Project Team	
11/18		JICA Project Team	
12/18		—	
13/18		JICA Project Team	
14/18		BMCDP Consultant Team	
15/18		JICA Project Team	
16/18		JICA Project Team.	
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Minutes of the Workshop18 (A2-WS8)
-Bridge Management Capacity Development Project-

Date May 22, 2016 10:00 – 11:40
Venue Chief Engineer's Conference Room, RHD, Sarak Bhaban, Tejgaon.
Chaired by Mr. Parimal Bikash Sutradhar
Additional Chief Engineer, Bridge Management Wing, RHD
Project Director, Bridge Management Capacity Development Project.
Participants Attendance sheet attached

1. **Opening Address** : The goals of the Project including the necessity of developing a Bridge Rehabilitation/Strengthening Manual for Rehabilitation and Strengthening of defected bridges for proper bridge maintenance system had been focused by the Project Director. Some of the core members could not attend the workshop as they work in the Cyclone "Roanu" affected areas. Cyclone "Roanu" hit Bangladesh on May 21, 2016.

2. **Explanation of Reference: Development of Bridge Rehabilitation/Strengthening Manual; Part 1: Rehabilitation and Strengthening.**

A. JICA Consultant Mr. Yasuo KOSAKA presented and explained the followings.

- a) Overview of Repair Works
- b) Principles and Methods
- c) Examples of Rehabilitation
- d) Examples of Strengthening
- e) Application and Quality Control

B. Summary of discussions on above mentioned Topics

a) Overview of the Repair Works

- The target of repair is to re-gain the level of performance of a structure as close as possible to its initial level of performance. On the other hand, the target of strengthening is to increase the level of performance of the structure than its initial level of performance.
- Whenever a bridge structure is selected for rehabilitation or strengthening, the condition of the bridge, its history, original design approach, design life and other related issues must be reviewed thoroughly to select the most appropriate method of rehabilitation and to plan & execute the rehabilitation works.
- The most important job of the Engineer is to choose the appropriate materials and application of those in the rehabilitation works.

b) Principles and Methods

- Different types of method and principle are being used worldwide for bridge rehabilitation and strengthening, as example – EN-1504 and EN ISO 8501 etc.
- Brief notes about the basic principles of these standards should be mentioned in the manual so that it helps the engineers to understand the basic principles of repair works.

c) Examples of Rehabilitation

- Consultant showed many examples of rehabilitation methods which are commonly being used worldwide. These methods will be sorted against the defect types in the manual.
- It was proposed to correlate the methods of rehabilitation with all the defect types, so that it can be easily understood about the particular remedy for a particular defect type. Consultant confirmed that the repair methods should be correlated with all the defect types in the manual.
- Photos of “before repair” and “after repair” of the defects will be provided.
- Epoxy coating is used for waterproofing and saving the concrete surface from different weathering actions. Usually rigid coating is used because flexible coating is thicker and more expensive. But in coastal areas flexible coating is used since the weathering actions in the coastal areas are more abrasive than the weathering action in main land areas.
- Regarding the use of epoxy primer for waterproofing, consultant was requested to study about the “slurry seal” which is commonly being used in Bangladesh and to compare between the use of epoxy and “slurry seal” for waterproofing.
- Consultant showed a formula to calculate the “expansion length” of the bridge in relation with the temperature difference. Consultant was requested to review the formula in comparison with the new bridge design code in Bangladesh.
- Consultant showed different methods of Expansion Joint repair such as Asphalt Plug Joint, Buried Joint etc. Request has been made to show the photo of “before repair” for the better understanding of the situations in which these steps can be taken.
- Consultant showed that sometimes for smooth driving, expansion joints can be removed and the deck slab can be made continuous while the girders will remain as it is (discontinuous). As it is a design related issue, before going for this type of repair works, it should be customary to consult the design division.
- Consultant was requested to review the existing repair manual of RHD and find out its limitations; and to prepare the new manual in such a way that the new manual will be free of those limitations.

d) Examples of Strengthening

- Strengthening is done to increase the load bearing capacity or the service life of the structure. Many types of method are being used worldwide for strengthening.
- Use of CFRP sheet for strengthening concrete structures is very common. For repairing the Jamuna Bridge in Bangladesh, a lot of CFRP sheet have been used.
- Sometimes additional pier support is provided to support a girder; it is very complex issue since the stress distribution of the girder changes due to that additional support.

e) Application and Quality Control

- Surface preparation is very important part for applying any repair material.
- The quality of the repair work depends on the careful diagnosis of the cause of deterioration, choice of correct repair method & material and performing the repair work by trained, experienced and professional technicians.
- Repair works include safety hazards; so enough precautions must be taken to ensure the safety of the workers.

3. Explanation of Part 1-2: Routine Maintenance Works.

A. JICA Consultant Mr. Yasuo KOSAKA presented different types of Routine Maintenance works for bridges.

B. Summary of Discussions on above mentioned topic

- It was told that “Routine Maintenance” must not be related to “Routine Inspection”, routine maintenance may have to be done very frequently rather than 6 months. But the consultant told that it was proposed considering the workload of field divisions. It will be impossible for them to go for maintenance work very frequently. But in case of emergency such as defect of Portable Steel Bridge, the EE/SDE will send some people for repair based on the situation.
- It was proposed that there must be some relation of EE/SDE with the routine maintenance team in the organogram.
- Photos of equipment required for routine maintenance works should be provided.
- Maintenance of public safety related elements such as railing, light post etc. should be included on the routine maintenance works.

4. Next WS Schedule

Next Workshop on the development of Bridge Rehabilitation/Strengthening Manual (Cost Estimation) is scheduled to be at 12:10 PM on May 29, 2016 (Sunday).

The Chairperson ended the workshop with thanks to all for their fruitful discussions and wished the success of the project within the scheduled time.

Date : May 22, 2016

Peoples Republic of Bangladesh / Japan International Cooperation Agency (JICA)

Bridge Management Capacity Development Project

Workshop 18 (A2-WS8)

ATTENDANCE SHEET

	Name	Belongings	Signature
1		ACE, RHD, BMW AND PD, BMCDP	
2		SE, RHD, ROAD CIRCLE 2 APD, BMCDP	
3		JICA EXPERT	
4		JICA project team	
5		JICA project team	
6		JICA Team	
7		JICA consultant Team	
8		JICA consultant Team	
8 8		EE, RHD, BMMS, DIV	
9 10		EE, RHD, Barisal Road Div.	
10 11		SDE, RHD, BMMS Division	
11 12		JICA Project Team	
12 13		"	
13 14		JICA Project team.	
14 15		EE, RHD, Rajshahi Div.	
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Minutes of the Workshop 19 (A2-WS9)
-Bridge Management Capacity Development Project-

Date May 22, 2016 12:10 – 13:35
Venue Chief Engineer's Conference Room, RHD, Sarak Bhaban, Tejgaon.
Chaired by Mr. Parimal Bikash Sutradhar
Additional Chief Engineer, Bridge Management Wing, RHD
Project Director, Bridge Management Capacity Development Project.
Participants Attendance sheet attached

1. **Opening Address** : The goals of the Project including the necessity of developing a Cost Estimation Manual for Bridge Rehabilitation and Strengthening to establish proper Bridge Maintenance system had been focused by the Project Director.

2. **Explanation of Reference: Development of Bridge Rehabilitation/Strengthening Manual: Part 2 : Cost Estimation.**

A. JICA Consultant Mr. Yukitomo TATSUMI presented and explained the followings.

- a) Objectives of Cost Estimation Manual
- b) Existing Cost Estimation Manual in Bangladesh (Schedule of Rate)
- c) Existing Cost Estimation Manual in Japan
- d) Items of Cost Estimation Manual
- e) Unit Cost for Labors and Materials

B. Summary of discussions on above mentioned topics

- a) Objectives of Cost Estimation Manual
 - To calculate the costs for rehabilitation/strengthening works of defective section of the bridges.
 - To secure budget from the government for rehabilitation/strengthening works of defective bridges.
 - Using BMS, prioritizing and planning the details of rehabilitation/strengthening of defective bridges according to the condition of the bridge and available budget.
 - To evaluate the tender prices from bidders for the rehabilitation/strengthening works.
- b) Existing Cost Estimation Manual in Bangladesh
 - RHD has Schedule of Rates – 2015 (SoR) for the estimation of cost.
 - Existing Cost Estimation Manual mainly focused on new construction of bridges. Maintenance, rehabilitation and strengthening for bridges are not focused much.
 - RHD included transportation cost, labor cost, VAT, tax and contractor's profit for



the unit price of every item in the Schedule of Rate.

- For some small size repair works like crack repair, spray applied mortar/concrete waterproofing of concrete element of bridges and culverts, many departments of Bangladesh are using PWD's (Public Works Department) schedule of rate; but for a proper and sustainable bridge maintenance system, RHD should have their own schedule of rate for all sorts of bridge repair, rehabilitation and strengthening works.
- RHD's method of setting unit price is considered during the preparation of Cost Estimation Manual.

c) Existing Cost Estimation Manual in Japan

- Japan has Cost Estimation Manuals of rehabilitation and strengthening for inside and outside of Japan. Bangladesh is one of the countries for which the "manual for outside of Japan" is applicable.
- Japanese Manuals are applied to complement the item of rehabilitation and strengthening which is not mentioned in Schedule of Rates.

d) Items of Cost Estimation Manual

- All the necessary items for Bridge Rehabilitation and Strengthening will be included in this manual. BMS will estimate the overall cost of rehabilitation work based on the rates of this manual.
- Routine maintenance works for bridges are also added in the cost estimation manual.
- If any material or machine is not available in Bangladesh, consultant will provide necessary information of the material (specification, rate) and the machinery in the manual. Because RHD have to get approval from the government for the materials and machinery.
- All the items of Cost Estimation Manual must be approved by the concerned authority of the Government of Bangladesh.
- Consultant should include some examples of cost estimation of full repair work through BMS in the manual.

e) Unit Cost for Labor and Materials

- Consultant will follow local practice to calculate the unit price of labor and materials.
- Unit costs vary from time to time. It is recommended to update the unit price according to market condition from time to time.



3. Explanation of Reference: Essential Viewpoints during Inspection of Bridges.

A. JICA Consultant Mr. Rikiya IIZUKA presented and explained some pending issues of Bridge Inspection Manual for Mr. Ikuo HARAZAKI. Those are as follows -

a) Essential Points during Inspection of Bridges

B. Summary of Discussions on above mentioned topic

a) Essential Points during Inspection of Bridges

- These are the summary of guidelines for the Inspector for Periodic Inspection.
- It was requested to replace "Under Bridge Girder Inspection" with "Under Bridge Inspection" or "Under Bridge Deck Slab Inspection" in the reference documents.
- It was requested not to mention anything based on "assumption" in the manual like 'construction joint'; it is not visible every time. If it must be mentioned then there must be some notes regarding this issue e.g. if found or if visible.
- It was asked that if it is impossible to make visual check on the pre-stressing tendons then what shall the inspector do. Mr. Harazaki's response is as follows - Bridge inspection is like a detective work in which the presence of a problem, its severity and extent, and its probable cause etc. are deduced based on some signs on the bridge structure. (Similar to the work of medical doctor).

Inspector can do the followings to determine the existence of defect.

- 1) For the particular defects of pre-stressed concrete girder bridges, the inspector should be particularly concerned with visible signs of cracking, section loss or other deterioration.
 - 2) In some cases listening sound by hammer tapping is effective for identifying the defects such as delamination.
 - 3) The shiplap cantilevers with reentrant corners should be inspected very carefully for signs of cracking or other deterioration.
 - 4) For concrete box girders, the inspector should investigate unusual noises, such as banging and screeching, which may be a sign of structural distress. It is necessary to closely examine the joints between the segments for any signs of leakage or infiltration.
- If any defect of the pre-stressing tendon is suspected it is better to go for detailed investigation to find out the condition of the defect.
 - Consultant was requested to think about the option for the Inspector to provide his opinions about the cause of the defect. It might be very good option for the self development of the Inspector, but it could be dangerous for the department if an inexperienced inspector's opinions are directly accepted without any verification. An option maybe created for him to provide his opinions but the cause of defect

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must be reported by the Evaluator; if needed the Evaluator should go to the field to have a look for himself into the defect.

- Inspection is the first important step for the maintenance of bridges. Utmost care is necessary to make it fruitful.
- This reference document will be added as an appendix of the Bridge Inspection Manual and will be used as guidelines of bridge inspection during OJT.

4. Next WS Schedule

Next Workshop on Bridge Management System (BMS) is scheduled to beat 10:00 AM on May 29, 2016 (Sunday).

The Chairperson ended the workshop with thanks to all for their fruitful discussions and wished the success of the project within the scheduled time.

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Date : May 23, 2016

Peoples Republic of Bangladesh / Japan International Cooperation Agency (JICA)

Bridge Management Capacity Development Project

Workshop 19 (A2-WS9)

ATTENDANCE SHEET

	Name	Belongings	Signature
1		R ACE, BMW, RHD	
2		SE, RHD, RHD Circle. MPD, BMCDP	
3		EE, RHD, BMMS DIVISION	
4		SS RHD Barisal Road Division	
5		SDE, RHD BMMS Division	
6		JICA EXPERT	
7		JICA project team	
8		Jica Project Team	
9		JICA Team	
10		JICA Project Team	
11		JICA Project Team	
12		"	
13		JICA Project Team.	
14		EE, RHD, Rajshahi Div.	
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Minutes of the Workshop 20 (A3-WS3)
Bridge Management Capacity Development Project

Date	May 29, 2016 10:10-13:02
Venue	Chief Engineer's Conference Room, RHD, Sarak Bhaban, Tejgaon.
Chaired by	Mr. Parimal Bikash Sutradhar Additional Chief Engineer, Bridge Management Wing, RHD Project Director, Bridge Management Capacity Development Project.
Participants	Attendance sheet attached

1. **Opening Address:** The goals of the Project including the importance for developing an internet & intranet based Bridge Management Systems (BMS) for bridge maintenance management and to ensure the good health condition of the bridges and consequent budget for necessary remedial works had been addressed by the Project Director.
2. **Explanation of Reference:** BMCDP_WS20(BMS3)_160529- "Procedure and Function of Bridge Management System".

A. JICA Consultant (Mr. KENGO MAKISHIMA) presented and explained the followings:

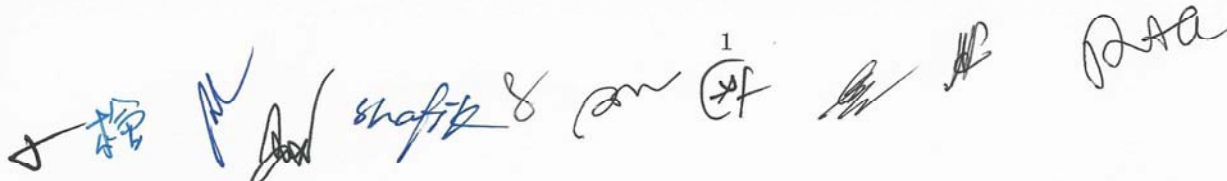
- a) Preparation Step (including site inspection)
- b) Input Step
- c) BMS Approval Step
- d) Output Step
- e) BMS System Management

B. System Manager of JICA Project Team (Mr. Md. Mahmud Hossain) presented and explained the followings:

- a) Progress of Construction of BMS
 - Login to BMS
 - Dashboard
 - Menu and Navigation
 - BMS Configuration by System Admin
 - User Registration
 - Bridge Data

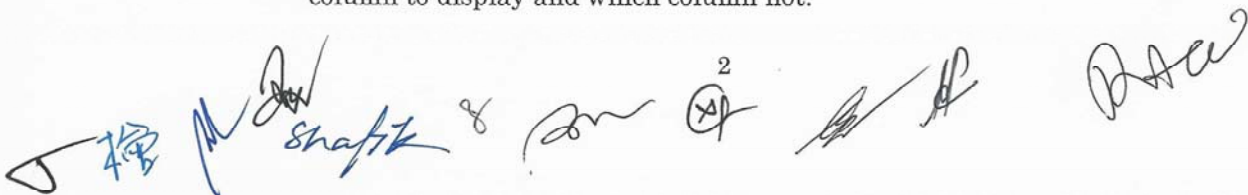
C. Discussions on above mentioned Topics

- a) Preparation step of data entry and inspection
 - All bridge basic data (Bridge name, type, LRP, Location, Bridge Type, Numbers of Span, Length, Width etc.) will be entered by a "Data Entry Operator" and it



will be checked by "Data Cross Checker". Both of them will be from BMW (RHD Head Quarter). This data will be viewed by all users and then be used to prepare inspection sheets.

- The inspection team in BMS is composed of EE as Chief Inspector, SDE as Senior Inspector, SAE as Inspector.
 - Sub-division office prepares the inspection sheets using BMS. There are two types of inspection – Periodic and Routine Inspection. The inspection team prepares the blank sheet, print it out and move to field for the inspection.
- b) Inspection Data Input Steps (Inspection Flowchart)
- After the field inspection the Inspector (SAE) input the Inspection Data (Rating of defects a, b, c, d, or e) in BMS. Senior Inspector (SDE) checks the input and approves the result or call for re-inspection. If the inspected bridge previous condition was C or D in previous inspection, then the Chief Inspector (EE) will also check. SDE will send it to EE for re-check.
- c) Input of Evaluation Result (Evaluation Flowchart)
- Senior Inspector (SDE) starts evaluating the inspection result, input defect condition At, Bt, Ct, or Dt for each element type and save as draft (temporary) in BMS. This result is visible to the appraisal committee.
 - The appraisal committee is composed of SDE, EE and AEs from concerned Division, Circle and Zone office.
 - If there are major damage (Dt), then the appraisal committee checks the temporary result inputted by SDE, they can request for modification or re-inspection to the corresponding SDE if necessary; if not, they accept and approve the result. After approval the evaluation result is considered as final, the committee add their digital signature and it is published to the authorized users.
- d) BMS Calculation after Evaluation
- After the approval of evaluation result the BMS starts calculation for Bridge Condition and Priority. BMS populates an integrated list of Bridge Condition by A, B, C or D also it displays the priority based on some coefficients. Sub-Division office can see the list for his area; Division can see the list of all Sub-Division under it and so on for Circle and Zone. Bridge Condition of all areas are displayed to BMW for the approval of ACE. When ACE approves the priority list and adds his digital signature then the remedy list is displayed to all corresponding offices.
- e) Some Global Functions of BMS
- User can configure grid view of Bridge Data. That means he/she can set which column to display and which column not.



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- User can filter in various ways to find out the targeted bridge(s).
- User can sort the bridges in Ascending or Descending order.
- User can search the targeted bridge(s) by inputting keywords of bridge data.
- User can print his filtered, sorted or searched results.

f) BMS System Management

- BMS System Administrator (Super Admin) who holds the authority to Add/Edit/Delete items, update parameters etc. should be a person working in RHD HQ.
- BMS System Administrator Can Add/Edit/Update/Delete BMS settings related entity
- He/she will need consent from the ACE of BMW to do the above.

g) Progress of construction of BMS

- User can login in BMS using his/her employee Id and Password.
- After login he/she can see his dashboard.
- User will see his navigation based on his authorization in BMS
- BMS System Admin first configures the necessary settings to run BMS and other functions correctly
- System Admin register users in BMS and set his role and access level.
- For Bridge Data Entry 6 forms have been developed –
 1. Bridge basic data entry form
 2. Bridge shape data entry form
 3. Bridge location data entry form
 4. Bridge road data entry form
 5. Bridge element data entry form
 6. Bridge upload functionality and form

h) Discussions Summary

- RHD Administrators are mostly decision makers such as Chief Engineer, Additional Chief Engineers, Superintending Engineers, Executive Engineers and other concerned RHD officers. BMS System Admin (Super Admin) is the person assigned by RHD for the operations and Maintenance of BMS.
- Bridge basic data will be entered centrally by Data Entry Operator, since this data is fixed and it will not mess up inspection results.
- About the integration of existing BMMS database into this new BMS, database admin of BMMS should be contacted.
- Public user will register to see bridge basic data. RHD users will be registered by System Admin.
- This site should have number of visitors and also track the locations of public visitors.

3

The bottom of the page features several handwritten signatures and initials in blue ink. From left to right, there is a signature that appears to be 'S. A. B.', followed by 'shafiq', a signature with a circled 'X', and several other initials and signatures including 'D. A. B.' and 'D. A. B.'.

- For file name no need for HH:MM (Hour & Minute). It should be only Road number + LRP number + YYYYMMDD
- Demo version should be available to all C/M before installing/deploying to RHD system.
- Any functions related to ACE of BMW should be viewable to his sub-ordinates with proper authorization and consent of ACE, so that they can take care of it in case when ACE remains busy.
- Filter functionality should be highly usable and all possible filtering should be there.
- "Other Cost" option should be in BMS for total cost adjustment.
- LRP name will never be same for more than one bridge.
- BMS should have functions to calculate rough cost for Bridge Remedial Measures.
- There should be a point where users can input some files (like excel) for the cost estimate. Because there will be unit cost in the BMS, if user inputs the quantity of defect, BMS will simply multiply and calculate the cost. But the scenario may be different for different cases like temporary facilities, user may need some other cost like temporary approach road etc. For those, BMS must have some provisions to input those costs.
- The evaluator will know the appropriate remedial method for the defect. There will be option for him to put his choice.
- About the image upload speed, BMS should handle the file size and improve upload speed. But internet speed is also a factor.
- "Evaluator will input evaluated category only. But for the calculation of cost, method of remedy, length/area of defect will be required.
- BMS will consider defect by defect and element by element, so that it can select adequate method."
- BMS will show the remedial methods depending on the element and quantity of the defects. These are typical methods and will be included in BMS. The cost is approximate, not exact. It is advised to manually calculate the cost in details.

3. Next WS Schedule

Next Workshop on Bridge Rehabilitation & Strengthening and Cost Estimation is scheduled to be at 10:00 AM on June 19, 2016 (Sunday).

The Chairperson ended the workshop with thanks to all for their fruitful discussions and wished the success of the project within the scheduled time.

Date : May 29, 2016

Peoples Republic of Bangladesh / Japan International Cooperation Agency (JICA)

Bridge Management Capacity Development Project

Workshop 20 (A3-WS3)

ATTENDANCE SHEET

	Name	Belongings	Signature
1		ACE, BMW, RHD & PD, BMCDP	
2		SE, PLD, APD, BMCDP	
3		EE, BMMS DIVISION	
4		EE, RHD, Barisal Road Div.	
5		EE, RHD, Comilla Road Div.	
6		EE, RHD, Habiganj Road Division.	
7		EE, RHD, RAJSHAHI ROAD DIV.	
8		SDE, RHD, BMMS DIVISION	
9		JICA Expert	
10		JICA Project Team	
11		JICA Project Team	
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Minutes of the Workshop21 (A2-WS10)
-Bridge Management Capacity Development Project-

Date June 19, 2016 12:10 – 13:55
Venue Chief Engineer's Conference Room, RHD, Sarak Bhaban, Tejgaon.
Chaired by Mr. Parimal Bikash Sutradhar
 Additional Chief Engineer, Bridge Management Wing, RHD
 Project Director, Bridge Management Capacity Development Project.
Participants Attendance sheet attached

1. **Opening Address** : The goals of the Project including the necessity of developing a Bridge Rehabilitation/Strengthening Manual for Rehabilitation and Strengthening of defective bridges for the proper maintenance of bridges had been focused by the Project Director.

2. **Explanation of Reference: Development of Bridge Rehabilitation/Strengthening Manual: Part 1: Rehabilitation and Strengthening Method.**

A. JICA Consultant Mr. Yasuo KOSAKA presented and explained the followings.

- a) Overview
- b) Routine Maintenance Works
- c) Minor Repair Works
- d) Selection flow of Repair Methods
- e) Major Repair Methods for different Defects

B. Summary of discussions on above mentioned Topics

a) Overview

- Most of the photos shown in the reference documents are from foreign countries rather than Bangladesh. The photos in the reference documents are mainly for demonstration on repair method of defective bridges, not for the manual; photos of bridge repair works from Bangladesh will be put in the manual as many as possible.
- The photos from the "Training of RHD Core Members in Japan in April 2016" for different rehabilitation procedures and methods may be added.
- Monetary value should not be the only criterion to differentiate between "minor" & "major" repair; as the whole thing will depend on the technology, method & monetary involvement for rehabilitation.
- According to RHD practice, PMP Major and PMP Minor are decided based on the budget of the repair works. It will be decided later that "at what stage in BMS" the repair works will be divided as PMP Major & PMP Minor.

1



- It was suggested to correlate the repair methods for all the 26 types of defects with the other manuals.

b) Routine Maintenance Works

- Routine maintenance works include cleaning the deck, removing debris, removing flow obstructing objects from the channel, fasten loose bolts etc.
- Routine maintenance team led by SAE should work by the guidance/supervision of SDE and will report to EE upon completing the work.
- Consultant presented the photos of tools and equipment for routine maintenance works as requested by APD in the previous workshop.
- It was asked to include repainting of user safety related items such as road sign and other markings in routine maintenance works.

c) Minor Repair Works

- Minor repair works include small scale repair, partial replacement, partial repainting etc. which can be done by unskilled worker under the supervision of an experienced supervisor.
- Consultant proposed a team for minor repair works led by SAE and consist of one foreman & two unskilled workers. They should work under the authority of SDE.
- Consultants showed the required tools and equipment for minor repair.
- Detailed procedure of minor repair methods will be attached to the manual as appendix.

d) Selection flow of Repair Methods

- Consultant presented the selection flow of Repair Methods for Concrete & Steel elements of bridge structures; elements of superstructure (concrete & steel) and substructure; Expansion Joint; Bearing and Foundation separately.
- Consultant told that after the selection of a bridge for major repair, "Detailed Investigation" must be done before going for the execution of repair works.

e) Major Repair Methods for different Defects

- After lot of discussions about the seasonal temperature difference for the calculation of expansion length; it was decided that this issue will be solved after reviewing the bridge design data (temperature) in Bangladesh.
- For the repair of "scouring", consultants showed "placing riprap" and "underwater concreting" methods. These methods are applicable for shallow water only; but most of the cases in Bangladesh, water level is very high. These methods may not be applicable for those cases; therefore some methods in the cases of protective work in deep water with current and wave action can be reviewed.



- Consultant presented the photos of “before” and “after” repair of different repair methods.
- Consultants set relation between the defect type and repair method for the use in BMS. After input of the inspection/evaluation result into BMS, BMS will suggest the repair method for the defect. However the final selection of the repair method and design of repair work will be done after the “Detailed Investigation”.
- All the major repair methods will be added in the manual as appendix.

3. Next WS Schedule

Next Workshop on the development of Bridge Rehabilitation/Strengthening Manual (Cost Estimation) is scheduled to be at 01:56 PM on June 19, 2016 (Sunday).

The Chairperson ended the workshop with thanks to all for their fruitful discussions and wished the success of the project within the scheduled time.

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Date : June 19, 2016

Peoples Republic of Bangladesh / Japan International Cooperation Agency (JICA)

Bridge Management Capacity Development Project

Workshop 21 (A2-WS10)

ATTENDANCE SHEET

	Name	Belongings	Signature
1		ACE, BMW, RHD	
2		SE, PLD, APD, BMCDP	
3		SE, RAAD; APD, 3rd Shitalakhya Bridge Cont. Project	
4		EE / BMMS DIVISION	
5		SE, Road Dir. Barisal	
6		EE, Rajshahi Road Div.	
7		EE, RHD, Bridge Design Division - 3	
8		SDE, BMMS Sub-division, DPM, BMCDP	
9		JICA Expert	
10		JICA Project Team	
11		JICA Project Team	
12		JICA Project Team	
13		JICA Project Team	
14		EE, Road Design & Standards Div	
15		EE, Comilla Road Div	
16		JICA Consultant Team	
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Minutes of the Workshop22 (A2-WS11)
-Bridge Management Capacity Development Project-

Date June 19, 2016 13:56 – 14:55
Venue Chief Engineer's Conference Room, RHD, Sarak Bhaban, Tejgaon.
Chaired by Mr. Parimal Bikash Sutradhar
Additional Chief Engineer, Bridge Management Wing, RHD
Project Director, Bridge Management Capacity Development Project.
Participants Attendance sheet attached

1. **Opening Address** : The goals of the Project including the necessity of developing a Cost Estimation Manual for Bridge Rehabilitation and Strengthening to establish proper Bridge Maintenance system had been addressed by the Project Director.

2. **Explanation of Reference: Development of Bridge Rehabilitation/Strengthening Manual; Part 2 : Cost Estimation.**

A. JICA Consultant Mr. Yukitomo TATSUMI presented and explained the followings.

- a) Cost Estimation Standard in Bangladesh
- b) Cost Estimation Standard in Japan
- c) Proposed Cost Estimation Manual
- d) Items of Cost Estimation
- e) Calculation of Cost Estimation
- f) Summary of Unit Price

B. Summary of discussions on above mentioned Topics

- a) Cost Estimation Standard in Bangladesh
 - RHD has their own method to prepare the Schedule of Rate (SoR); three segments are being used in the SoR, (i) Materials, (ii) Equipment & (iii) Labor; the cost of an item of work has contribution of these three items.
 - RHD collect data of market rate of an item from different regions of Bangladesh so that regional variation can be taken into account in the SoR.
 - Labor cost depends on the time (whole work period & daily work period) and skill (skilled or unskilled) of the labor.
 - Cost of equipment and scaffolding is added as a part of the contract based on site condition and nature of work.
 - Site expense is added in the contract price depending on the size and volume of the work.
 - VAT, Tax, contractor's profit are included in Schedule of Rate (SoR) of RHD, but overhead cost is not.

(Handwritten signatures and initials)

b) Cost Estimation Standard in Japan

- Cost Estimation Standards in Japan is composed of direct cost, indirect cost, overhead and TAX, VAT.

c) Proposed Cost Estimation Manual

- The proposed cost estimation manual is prepared based on two standards, SoR of RHD and Japanese Standard.
- VAT, Tax, Overhead cost, Contractor's profit are included in the proposed cost estimation manual. These were applied from Bangladesh Standard. And the cost estimator can choose to apply the Bangladesh Standard or Japanese Standard for the site expense.
- It is important to include the specification of the items in the manual.

d) Items of Cost Estimation

- Cost estimation of all the necessary items for Bridge Rehabilitation and Strengthening will be included in this manual.
- Scaffolding, repair materials for concrete elements, steel elements, concrete deck, concrete pier, bearing, expansion joint, bridge pavement surface and other bridge elements are the major items for cost estimation manual.

e) Calculation of Cost Estimation

- Consultant showed detailed calculation of cost estimation for every item.
- Consultant also showed the cost estimation of different types of an item, as example different types of scaffolding, excavation in different places etc.
- Bangladesh market price was applied for almost all items.
- For the items unavailable in Bangladesh, the price rate of Japan is applied.
- Only a few items are not available in Bangladesh market such as fluid recasting mortar/concrete, spray applied mortar etc.

f) Summary of Unit Prices

- The unit price of many items for bridge repair works was presented.
- These unit prices are in need to be reviewed.
- Unit prices of different items will be finalized after the review.

3. Next WS Schedule

Next Workshop on Bridge Management System(BMS) is scheduled to beat 10:00 AM on July 24, 2016 (Sunday).

The Chairperson ended the workshop with thanks to all for their fruitful discussions and wished the success of the project within the scheduled time.



Date : June 19, 2016

Peoples Republic of Bangladesh / Japan International Cooperation Agency (JICA)

Bridge Management Capacity Development Project

Workshop 22 (A2-WS11)

ATTENDANCE SHEET

	Name	Belongings	Signature
1		ACE, BMW, RHD	
2		SE-RHD, APD, BMCDP	
3		SE/RHD, APD, 3 rd Shimulakha Bridge Construction	
4		EE/BMMS DIVISION	
5		EE, Road Div. Barisal	
6		EE, RHD, Rajshahi Road Div.	
7		or XEN, BDD-3	
8		EE, Road Design & Standard Div.	
9		SDE, BMMS sub division; DPM, BMCDP	
10		JICA Expert	
11		JICA Project Team	
12		JICA Project Team	
13		JICA Project Team	
14		JICA Project Team	
15		EE, comilla Road Div.	
16		JICA Consultant Team	
17		"	
18		"	
19			
20			

Minutes of the Workshop 23 (A3-WS4)
Bridge Management Capacity Development Project.

Date January 29, 2017 10:30-13:05
Venue Chief Engineer's Conference Room, RHD, Sarak Bhaban, Tejgaon.
Chaired by Ms. Rowshan Ara Khanam
Additional Chief Engineer, Bridge Management Wing, RHD
Project Director, Bridge Management Capacity Development Project.
Participants Attendance sheet attached

1. **Opening Address:** The goals of the Project including the importance for developing an internet & intranet based Bridge Management Systems (BMS) for bridge maintenance management and to ensure the good health condition of the bridges and consequent budget for necessary remedial works had been addressed by the Project Director.

2. **Explanation of Reference: "Introduction of Bridge Management System".**

A. JICA Consultant (Mr. KENGO MAKISHIMA) and System Manager of JICA Project Team (Mr. Md. Mahmud Hossain) presented and explained the followings:

- a) Outline of BMS
- b) BMS to each Authorized User
- c) Selection of Remedial Measure
- d) Calculation of Remedial Cost
- e) Unsettled Business after Workshop

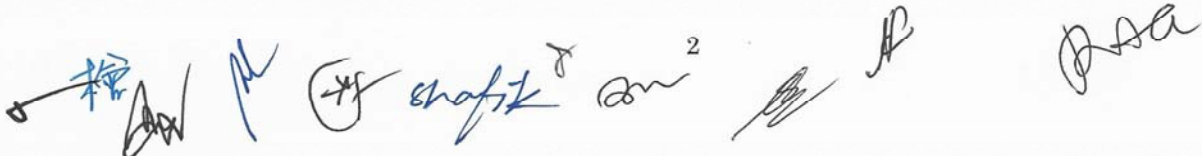
B. Discussions on above mentioned topics

a) Preparation step of data entry and inspection

- All bridge basic data (Bridge name, type, LRP, Location, Bridge Type, Numbers of Span, Length, Width etc.) will be entered by a "Data Entry Operator" and it will be checked by "Data Cross Checker". Both of them will be from BMW (RHD Head Quarter). This data will be viewed by all users and then be used to prepare inspection sheets.
- The inspection team in BMS is composed of EE as Chief Inspector, SDE as Senior Inspector, SAE as Inspector.
- Sub-division office prepares the inspection sheets using BMS. There are two types of scheduled inspection – Periodic and Routine Inspection, during which filling the inspection sheet will be required. The inspection team prepares the blank sheet, print it out and move to field for the inspection.



- b) Inspection Data Input Steps (Inspection Flowchart)
- After the field inspection the Inspector (SAE) input the Inspection Data (Rating of defects a, b, c, d, or e) in BMS. Senior Inspector (SDE) checks the input and approves the result or call for re-inspection. If the inspected bridge's previous condition was C or D in previous inspection, then the Chief Inspector (EE) will also check. SDE will send it to EE for re-check.
- c) Input of Evaluation Result (Evaluation Flowchart)
- Senior Inspector (SDE) starts evaluating the inspection result, input defect condition At, Bt, Ct, or Dt for each element type and save as draft (temporary) in BMS. This result is visible to the appraisal committee.
 - The appraisal committee is composed of SDE, EE and AEs from concerned Division, Circle and Zone office.
 - If there are major damage (Dt), then the appraisal committee checks the temporary result inputted by SDE, they can request for modification or re-inspection to the corresponding SDE if necessary; if not, they accept and approve the result. After approval the evaluation result is considered as final, the committee members will add their digital signature and it will be published to the authorized users.
- d) BMS Calculation after Evaluation
- After the approval of evaluation result, the BMS starts calculation for Bridge Condition and Priority. BMS populates an integrated list of Bridge Condition by A, B, C or D; also it displays the remedial priority based on some coefficients. Sub-Division office can see the bridges list of his area; Division can see the list of all Sub-Division under it and so on for Circle and Zone. Bridge Conditions of all areas are displayed to BMW for the approval of ACE. When ACE approves the priority list and adds his digital signature then the remedy list is displayed to all corresponding offices.
- e) Some Global Functions of BMS
- User can configure grid view of Bridge Data. That means he/she can set which column to display and which column not to display.
 - User can filter in various ways to find out the targeted bridge(s).
 - User can sort the bridges in Ascending or Descending order.
 - User can search the targeted bridge(s) by inputting keywords of bridge data.
 - User can print his filtered, sorted or searched results.
- f) BMS System Management
- BMS System Administrator (Super Admin) who holds the authority to Add/Edit/Delete items, update parameters etc. should be a person working in RHD HQ.



- BMS System Administrator Can Add/Edit/Update/Delete BMS settings related entity
- He/she will need consent from the ACE of BMW to do the above.
- g) Progress of construction of BMS
 - User can login in BMS using his/her employee Id and Password.
 - After login he/she can see his dashboard.
 - User will see his navigation based on his authorization in BMS
 - BMS System Admin first configures the necessary settings to run BMS and other functions correctly
 - System Admin register users in BMS and set his role and access level.
 - For Bridge Data Entry 6 forms have been developed –
 1. Bridge basic data entry form
 2. Bridge shape data entry form
 3. Bridge location data entry form
 4. Bridge road data entry form
 5. Bridge element data entry form
 6. Bridge upload functionality and form
- h) Main Discussions Summary
 - RHD Administrators are mostly decision makers such as Chief Engineer, Additional Chief Engineers, Superintending Engineers, Executive Engineers and other concerned RHD officers. BMS System Admin (Super Admin) is the person assigned by RHD for the operations and Maintenance of BMS.
 - Bridge basic data will be entered centrally by Data Entry Operator, since this data is fixed and it will not mess up inspection results.
 - About the integration of existing BMMS database into this new BMS, database admin of BMMS should be contacted.
 - Public user will register to see bridge basic data. RHD users will be registered by System Admin.
 - This site should have number of visitors and also track the locations of public visitors.
 - For file name no need for HH:MM (Hour & Minute). It should be only Road number + LRP number + YYYYMMDD
 - Demo version should be available to all Core Members before installing/ deploying to RHD system.
 - Any functions related to ACE of BMW should be viewable to his sub-ordinates with proper authorization and consent of ACE, so that they can take care of it in case when ACE remains busy.
 - Filter functionality should be highly usable and all possible filtering should be

there.

- "Other Cost" option should be in BMS for total cost adjustment.
- LRP name will never be same for more than one bridge.
- BMS should have functions to calculate rough cost for Bridge Remedial Measures.
- There should be a point where users can input some files (like excel) for the cost estimate. Because there will be unit cost in the BMS, if user inputs the quantity of defect, BMS will simply multiply and calculate the cost. But the scenario may be different for different cases like temporary facilities; user may need some other cost like temporary approach road etc. For those, BMS must have some provisions to input those costs.
- The evaluator will know the appropriate remedial method for the defect. There will be option for him to put his choice.
- About the image upload speed, BMS should handle the file size and improve upload speed. But internet speed is also a factor.
- "Evaluator will input evaluated category only. But for the calculation of cost, method of remedy, length/area of defect will be required.
- BMS, will consider defect by defect and element by element, so that it can select adequate method.
- BMS will show the remedial methods depending on the element and quantity of the defects. These are typical methods and will be included in BMS. The cost is approximate, not exact. It is advised to manually calculate the cost in details.

The Chairperson ended the workshop with thanks to all for their fruitful discussions and wished the success of the project within the scheduled time.



Date : January 29, 2017

Peoples Republic of Bangladesh / Japan International Cooperation Agency (JICA)

Bridge Management Capacity Development Project

Workshop 23 (A3-WS4)

ATTENDANCE SHEET

	Name	Belongings	Signature
1		ACE (BMW) RHD PD BMCDP	
2		SE, Procurement	
3		SE, Planning & Data Circle	
4		XEN RHD Planning & Design	
5		EE, RHD Barisal Road Div.	
6		Executive Engineer, RHD Habiganj Road Division	
7		EE, Comilla Road Div.	
8		EE, Database Div.	
9		SDE Planning & Design Sub-Division	
10		EE, Road Design Standard Division	
11		EE, RHD, BDD-3 Satakhaban	
12		EE, RHD, Rajshahi Division	01.17
13		SE, RHD, 3rd Shitalakha Bridge Project	7
14		EXEC, BHP	
15		JICA Expert. Team Leader Team	
16		JICA PT Coordinator	
17		JICA Bangladesh Office	
18		Atom AP Ltd	
19		SDE, MONITORING & RHD	
20		Assistant Engineer (Bmms) Planning & Design Div.	20.11.17

Date : January 29, 2017

Peoples Republic of Bangladesh / Japan International Cooperation Agency (JICA)

Bridge Management Capacity Development Project

Workshop 23 (A3-WS4)

ATTENDANCE SHEET

	Name	Belongings	Signature
21		JICA Expert (BMS)	
22		System Manager	
23		Bridge Engineer BMCDP	
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ANNEX 5: Monitoring Sheet (copy)

Ver.1	18 th October, 2015
Ver.2	8 th February, 2016
Ver.3	23 rd March, 2017
Ver.4	23 rd March, 2017
Ver.5	3 rd December, 2017
Ver.6	15 th August, 2018

TO CR of JICA Bangladesh OFFICE**Project Title: BRIDGE MANAGEMENT CAPACITY DEVELOPMENT PROJECT****Version of the Sheet: Ver.1 (Term: July, 2015 - Feb, 2018)****Name: Yoshimitsu HIYAMA****Title: Chief Advisor****Submission Date: 18 October 2015****< I. Summary (all achievements are as of 30th August, 2015) >****1. Progress****1-1 Progress of Inputs****1-1-1 Japanese side****< Short-term experts dispatched to Bangladesh >**

NO	Name	Title	Dispatched Period to Bangladesh
1	Yoshimitsu HIYAMA	Team Leader/Bridge Maintenance Plan	(1 st) 8 th Aug - 12 th Sep, 2015
2	Ikuo HARAZAKI	Bridge Inspection	(1 st) 17 th Aug - 1 st Sep, 2015
3	Toshiyuki KONISHI	Bridge Diagnosis	(1 st) 20 th Aug - 2 nd Sep, 2015
4	Rikiya IIZUKA	Bridge Maintenance Plan (2)	(1 st) 9 th Aug - 4 th Sep, 2015
5	Kenichi HIDA	Detailed Survey	(1 st) 16 th Aug - 2 nd Sep, 2015
6	Yasuo KOSAKA	Bridge Rehabilitation · Retrofitting / Bridge Diagnosis (2)	(1 st) 16 th Aug - 1 st Sep, 2015
7	Kengo MAKISHIMA	Bridge Management System	(1 st) 20 th Aug – 12 th Sep, 2015
8	Chiaki YAMADA	Project Monitoring	(1 st) 23 rd Aug – 1 st Sep, 2015
9	Hideaki YASASHI	Coordinator/Bridge Maintenance Plan (Assistance)	(1 st) 8 th Aug – 2 nd Sep, 2015

< Equipment and materials >

NO	Items	Qty	Unit price	Unit	Total amount
1	PC for local staff (Secretary and accountant)	2	32,700	Tk	65,400 Tk

(Remark: Equipment and materials which have a durable years for 2 years and are more than JPY50,000 are listed.)

1-1-2 Bangladesh side

- **Counterpart (C/P) personnel (from RHD)**

NO	Name	Title of the Project	Engaged Period
1	Parimal Bikash Sutradhar	ACE, Project Director	8th Aug 2015 – at present
2	A.K.M. Manir Hossain Pathan, PEng.	SE, Additional Project Director	8th Aug 2015 – at present
3	Md. Shafikul Islam	EE, Project Manager	8th Aug 2015 – at present
4	Md. Sohel Rana	SDE, Deputy Project Manager	8th Aug 2015 – at present
5	Subodh Kumar Sarkar	SE, BRRL	8th Aug 2015 – at present
6	Md. Shahadat Hossain	EE, Bridge Design Division-1	8th Aug 2015 – at present
7	Parveen Sultana	EE, RHD Training Centre	8th Aug 2015 – at present
8	Shamima Nargis	EE, Monitoring & Evaluation Division	8th Aug 2015 – at present

- **Equipment and materials for the project office**

NO	Items	Qty	Unit
1	Office space (inside the training center)	2	room(s)
2	Office furniture	2	set(s)

1-2 Progress of Activities

NO	Activity	Achievement level
1.1	Actual condition of bridge maintenance is reviewed	<ul style="list-style-type: none"> ● To know the actual condition of bridge maintenance, hearing to RHD headquarter staff, Manikganj division staff and Sirajganj division staff were carried out. Furthermore, in Manikganj division and Sirajganj division the condition of bridges were inspected on August 20th and from August 23th until August 24th respectively. ● After September 1st, the status of current BMMS database is to be surveyed together with BMS expert by hearing to BMMS division staff and if necessary, hearing to MIS & Estates Circle staff of Management Services Wing, RHD.
2.1	Existing bridge maintenance manual is reviewed and issues/problems on the manual are analyzed	<ul style="list-style-type: none"> ● Existing bridge maintenance manuals were collected. ● Questionnaire concerning existing manuals with the answer limit of September 30th were submitted to Chief Engineer of RHD. ● The analysis on existing manuals is to be continued after the reception of answers.
3.1	Existing BMMS is reviewed and analyzed	<ul style="list-style-type: none"> ● Existing BMMS opened to public was reviewed. Several points to be improved were identified in BMMS's function of "search" and "display result of search". ● Hearing to BMMS division (RHD) staff is to be carried out in order to review "accuracy of input data", "actual status of use", "usability of BMMS" and "relationship with other

		<p>15 systems such as RMMS” at the beginning of September.</p> <ul style="list-style-type: none"> ● Components of BMMS such as data input system and the structure/design of BMMS, which are not opened to public, will be reviewed at the beginning of September. In order to access to it, we will need the terminal in RHD office and get permission to use it from RHD.
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(Remark: Field survey reports are attached)

1-3 Achievement of Output

Indicators of Outputs		Achievement level
1.1	Documents of Bridge maintenance procedure and staff deployment are approved by XX	<p>As the project has just commenced at the beginning of August, the achievement level of each indicator of outputs are not ready to be measured.</p> <p>Proper time for filling in XX should be considered among the Project team¹.</p>
1.2	Bridge inspection based on the bridge maintenance cycle is commenced by RHD	
1.3	Data management by utilization of BMS is commenced by RHD	
1.4	Bridge maintenance plan (annual budget and work plans) in model area(s) is prepared	
2.1	Bridge inspection / evaluation manual is approved by XX	
2.2	Bridge rehabilitation / strengthening manual is approved by XX	
3.1	Data accessibility of BMS is improved	
3.2	BMS manual is approved by XX	
4.1	XX bridge inspection MT are trained	
4.2	XX bridge rehabilitation MT are trained	
4.3	XX BMS administrators are trained	
4.4	The human resource development plan is approved	

1-4 Achievement of the Project Purpose

Indicators of Outputs		Achievement level
1	Bridge maintenance cycle is commenced by RHD	<p>As the project have just commenced in August, the achievement level of each indicator of outputs are not ready to be measured.</p>
2	Necessary training based on the human resource development plan is conducted by Master Trainers (MT)	

1-5 Changes of Risks and Actions for Mitigation

- Risks are not confirmed so far, thus actions for mitigation are not taken.

1-6 Progress of Actions undertaken by JICA

- JICA Bangladesh played a center role in organizing the 1st JCC, such as communicating with Secretary General to attend it as a chairperson.

¹ The project team are both RHD and consultant team.

1-7 Progress of Actions undertaken by Gov. of Bangladesh

- Secretary General from the Ministry of communication attended the 1st JCC as a chairperson.

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

- No activities for the progress of Environmental and Social Considerations are undertaken.

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

- Women engineers are planned to be assigned to the Project.

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.)

- Kick-off meeting not mentioned in PDM but related to the project was held on 18th Aug 2015 for disseminating the project scope, project implementation schedule and agenda of the 1st JCC. Participants are shown in the table below.

RHD	<ul style="list-style-type: none"> ● Parimal Bikash Sutradhar, ● Subodh Kumar Sarkar, ● A.K.M. Manir Hossain Pathan PEng., ● Md. Shahadat Hossain, ● Parveen Sultana, ● Shamima Nargis, ● Md. Shafikul Islam, ● Md. Sohel Rana
JICA	<ul style="list-style-type: none"> ● Takeshi Ishikura (JICA Expert)
Consultant Team	<ul style="list-style-type: none"> ● Yoshimitsu Hiyama (Team Leader) ● Kenichi Hida (Detailed Survey), ● Rikiya Iizuka (Maintenance Plan (2)), ● Yasuo Kosaka (Rehabilitation · Retrofitting / Diagnosis (2)), ● Ikuo Harazaki (Inspection), ● Hideaki Yasashi (Coordinator/ Maintenance Plan(Assistance)), ● Anis Sharif (Secretary)

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

- Based on the PDM, the project activities have been implemented as planned.

3. Modification of the Project Implementation Plan

3-1 PO

- PO version 0 was modified and version 1 was prepared based on the PDM version 1.

3-2 Other modifications on detailed implementation plan

- No other modification of the detailed implementation plan is confirmed.

PM Form 3-1 Monitoring Sheet Summary

PDM Version 0		Type of changes	PDM Version 1
Activity 4-1	On the job trainings (OJTs) on bridge inspection / diagnosis in model area(s) are conducted with Bridge inspection / diagnosis manual		On the job trainings (OJTs) on bridge inspection / <u>evaluation</u> in model area(s) are conducted with Bridge inspection / evaluation manual
Activity 4-3	OJTs on selection of bridge rehabilitation / <u>retrofitting</u> measures, cost estimation in model area(s) are conducted with Bridge rehabilitation / <u>retrofitting</u> manual		OJTs on selection of bridge rehabilitation / <u>strengthening</u> measures, cost estimation in model area(s) are conducted with Bridge rehabilitation / <u>strengthening</u> manual
Activity 4-4	Advices on supervision of bridge rehabilitation / <u>retrofitting</u> works are given by Expert		Advices on supervision of bridge rehabilitation / <u>strengthening</u> works are given by Expert
Activity 4-5	<u>Human resource</u> development plan is prepared	Modified	<u>Institutional capacity</u> development plan is prepared
Inputs Japanese side (Experts)	1) Bridge Maintenance Plan 2) Bridge Inspection 3) Bridge Soundness Evaluation 4) Bridge rehabilitation / retrofitting 5) Bridge Management System 6) Cost Estimation (Bridge Maintenance) 7) Project Coordinator	Added and modified	1) Team Leader/Bridge Maintenance Plan 2) Bridge Inspection (same as version 0) 3) Bridge Evaluation 4) Bridge Maintenance Plan (2) 5) Detailed Survey 6) Bridge Rehabilitation · Strengthening/Bridge Evaluation (2) 7) Cost Estimate 8) Bridge Management System 9) Asset Management 10) Project Monitoring 11) Coordinator/Bridge Maintenance Plan (Assistance)
Inputs Bangladesh side (Experts)	5) Other staffs	Modified	5) Other relevant units
Important Assumption	Bridge rehabilitation / <u>retrofitting</u> works for advisory activity (Activity 4-4) are implemented by RHD	Modified	Bridge rehabilitation / <u>strengthening</u> works for advisory activity (Activity 4-4) are implemented by RHD

TO CR of JICA Bangladesh OFFICE

Project Title: BRIDGE MANAGEMENT CAPACITY DEVELOPMENT PROJECT**Version of the Sheet: Ver.2 (Term: July, 2015 - Feb, 2018)****Name: Yoshimitsu HIYAMA****Title: Chief Advisor****Submission Date: 8th FEB 2016****< I. Summary (all achievements are as of 15th January, 2016) >****1. Progress****1-1 Progress of Inputs****1-1-1 Japanese side****< Short-term experts dispatched to Bangladesh >**

Short-term experts have been dispatched to Bangladesh almost as planned.

NO	Name	Title	Dispatched Period to Bangladesh
1	Yoshimitsu HIYAMA	Team Leader/Bridge Maintenance Plan	(1 st) 8 th Aug -12 th Sep, 2015 (2 nd) 17 th Oct – 14 th Nov, 2015 (3 rd) 17 th Dec, 2015 – 13 th Feb, 2016
2	Ikuo HARAZAKI	Bridge Inspection	(1 st) 17 th Aug - 1 st Sep, 2015 (2 nd) 4 th Dec, 2015 – 30 th Jan, 2016
3	Toshiyuki KONISHI	Bridge Diagnosis	(1 st) 20 th Aug - 2 nd Sep, 2015 (2 nd) 3 rd Dec – 19 th Dec, 2015 (3 rd) 14 th Jan – 30 th Jan, 2016
4	Rikiya IIZUKA	Bridge Maintenance Plan (2)	(1 st) 9 th Aug - 4 th Sep, 2015 (2 nd) 8 th Jan – 19 th Mar, 2016
5	Kenichi HIDA	Detailed Survey	(1 st) 16 th Aug - 2 nd Sep, 2015 (2 nd) 31 st Dec, 2015 – 16 th Jan, 2016
6	Yasuo KOSAKA	Bridge Rehabilitation · Retrofitting / Bridge Diagnosis (2)	(1 st) 16 th Aug – 1 st Sep, 2015 (2 nd) 5 th Nov – 30 th Dec, 2015
7	Yukitomo Tatsumi	Cost Estimate	(1 st) 3 rd Dec – 19 th Dec, 2015
8	Kengo MAKISHIMA	Bridge Management System	(1 st) 20 th Aug – 12 th Sep, 2015 (2 nd) 3 rd Dec – 19 th Dec, 2015 (3 rd) 14 th Jan – 30 th Jan, 2016
9	Kanji OHNO	Bridge Management System (2)	(1 st) 22 nd Jan – 6 th Feb, 2016
10	Chiaki YAMADA	Project Monitoring	(1 st) 23 rd Aug – 1 st Sep, 2015 (2 nd) 19 th Jan – 30 th Jan, 2016
11	Hideaki YASASHI	Coordinator/Bridge Maintenance Plan (Assistance)	(1 st) 8 th Aug – 2 nd Sep, 2015 (2 nd) 5 th Nov – 21 st Nov, 2015 (3 rd) 14 th Jan – 30 th Jan, 2016

(Remark: 1. Dispatched period shown in the above table is not as of 15th Jan and planned period and confirmed at JCC.
2. Bridge management System (2) is newly assigned into the Project)

< Equipment and materials >

NO	Items	Qty	Unit price	Unit	Total amount
1	PC for local staff (Secretary and accountant)	2	32,700	Tk	65,400 Tk

(Remark: Equipment and materials which have a durable years for 2 years and are more than JPY50,000 are listed.)

<Local Staff members (employed by the Project)>

NO	Name	Title of the Project	Engaged Period
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1	To be determined	System Engineer	-
2	Md.Abdullah Al Mahmud Bhuiyan	Bridge Engineer	17 th Nov 2015 – at present
3	To be determined	Technician	-
4	Mr. Anis Sharif	Interpreter/Coordinator	10 th Aug 2015 – at present
5	Ms. Swapna	Office cleaner	1 st Nov2015 – at present

(Remark: Candidate for s system engineer and a technician are under examined)

1-1-2 Bangladesh side

- Counterpart (C/P) personnel (from RHD) (Named “Core Member (CM)”in the Project).

Since the project commencement, necessary C/P has been allocated, which has been contributing the better project outputs.

NO	Name	Title of the Project	Engaged Period
1	Parimal Bikash Sutradhar	ACE, Project Director	8th Aug 2015 – at present
2	A.K.M. Manir Hossain Pathan, PEng.	SE, Additional Project Director	8th Aug 2015 – at present
3	Md. Shafikul Islam	EE, Project Manager	8th Aug 2015 – at present
4	Md. Sohel Rana	SDE, Deputy Project Manager	8th Aug 2015 – at present
5	Md.Shafiul Azam	EE, Database Division	8th Aug 2015 – at present
6	Parveen Sultana	EE, RHD Training Centre	8th Aug 2015 – 7 th January, 2016
7	Mohammed Shamim Al Mamun	Mymensingh Road Division	8th Aug 2015 – at present
8	Mohammed Saifuddin	Comilla Road Division	8th Aug 2015 – at present
9	Nazmul Hasan	Rajshahi Road Division	8th Aug 2015 – at present
10	Md. Khaled Shaheed	Barisal Road Division	8th Aug 2015 – at present
11	Salma Akter Khuky	EE, RHD Training Centre	7 th January,2016 – at present

- Equipment and materials for the project office**

NO	Items	Qty	Unit
1	Office space (inside the training center)	2	room(s)
2	Office furniture	2	set(s)

1-2 Progress of Activities

1) The table below includes the achievement of activities as of 15th (exceptionally, parts of achievement levels are as of the end of January), as well as some activities to be conducted in February, 2016. (WS=Workshop)

NO	Activity	Achievement level
1. Bridge maintenance framework is developed		
1.1	Actual condition of bridge maintenance is reviewed	<ul style="list-style-type: none"> Hearing on the actual condition of bridge maintenance with RHD headquarter staff, Manikganj division staff and Sirajganj division staff was carried out. The condition of bridges in Manikganj division and Sirajganj division was inspected on August 20th and from August 23th until August 24th respectively. Answers of the questionnaire (draft version) were submitted at the end of October, 2015 and actual condition of maintenance was reviewed and analyzed based on them.
1.2	Problems / issues on bridge maintenance cycle are identified	<ul style="list-style-type: none"> Problems/issues on bridge maintenance cycle were identified and explained at the first workshop held on 11th of November, 2015.
1.3	Institutional framework of bridge maintenance is reviewed	<ul style="list-style-type: none"> Institutional framework of bridge maintenance was reviewed, and the result of review was explained at WS4 held on 10th of January, 2016.

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1.4	Documents of bridge maintenance procedure and standard of staff deployment are prepared	<ul style="list-style-type: none"> Documents of bridge maintenance procedure and standard of staff deployment on bridge inspection were prepared and explained at WS7 held on 17th January, 2016.
2. Bridge inspection / evaluation manual and Bridge rehabilitation / strengthening manual are developed		
2.1	Existing bridge maintenance manual is reviewed and issues/problems on the manual are analyzed	<ul style="list-style-type: none"> Existing bridge maintenance manuals were collected. Based on the answers of the questionnaire (draft version), existing manuals were analyzed.
2.2	Bridge inspection / evaluation manual is updated (The achievement of Activity 2.2 is written in Activity 2.2.1 and Activity 2.2.2.)	
2.2.1	Bridge inspection / evaluation manual (Inspection) is updated	<ul style="list-style-type: none"> Results of the baseline survey submitted by RHD at the end of October was examined. WS2 (A2-WS1) named "Development of Bridge Inspection Manual" was conducted on 13th Dec. During WS, as the first step to modify the existing manual, the condition of bridge inspection in Japan was introduced. Furthermore, "Bridge Condition Survey Manual 2014" was reviewed, and contents of the manual need to be revised were discussed. During WS6 (A1-WS3) "Consideration Regarding Pending Items" held on 17th January, the part of "Types of Defects and Rating" in the manual was discussed. Reviewing work for "Bridge Condition Survey Manual 2014" will be continued until the next WS in February.
2.2.2	Bridge inspection / evaluation manual (Evaluation) is prepared	<ul style="list-style-type: none"> Preparation of Bridge inspection / evaluation manual (Evaluation) is in progress. Following agendas were explained during the WS3 (A2-WS2), conducted 13th December, 2015. <ul style="list-style-type: none"> a. Purpose of Bridge Evaluation b. Brief review of Bridge Evaluation Method in practice by RHD c. Cases of emergency damage d. Detailed survey of Bridges The Case of Detailed Investigation of Load Capacity was explained during WS5, conducted on 10th January, 2016. Draft of the evaluation Manual will be prepared in May 2016.
2.3	Bridge rehabilitation / strengthening manual is prepared (The achievement of Activity 2.3 is written in Activity 2.3.1 and Activity 2.3.2.)	
2.3.1	Bridge rehabilitation / strengthening manual (Rehabilitation/strengthening measures) is prepared	<ul style="list-style-type: none"> The implementation of the activity will be commenced in March, 2016.
2.3.2	Bridge rehabilitation / strengthening manual (Cost Estimate) is prepared	<ul style="list-style-type: none"> The implementation of the activity will be commenced in April, 2016.
2.4	Manuals for Bridge maintenance are explained to RHD staff by Master Trainers (MT)	<ul style="list-style-type: none"> The implementation of the activity will be commenced in OJT.
3. Bridge management system is developed		
3.1	Existing BMMS is reviewed and analyzed	<ul style="list-style-type: none"> Existing BMMS opened to public was reviewed. Several points to be improved were identified in BMMS's function of "search" and "display result of search". Reviewing BMMS was completed in September, 2015.

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		JICA experts analyzed shortage of functions and usability of existing BMMS, and interviewed with BMMS division and MIS in RHD. JICA experts and RHD confirmed that it is impossible to improve current BMMS because of technical issue, and new BMS should be constructed as new program.
3.2	Utilisation of BMS is examined together by RHD	● Examination of development of new BMS is in progress by RHD, with the supports of Japanese BMS experts. BMS basic design report ver.1 was submitted to BMMS division in December 2015. First workshop for BMS WS8 (A3-WS1) will be hold in 4 th February 2016.
3.3	Function of BMS is defined and developed	● Activity 3.3 – 3.6 are not implemented yet as of 15 th January 2016 and these activities will be commenced from February.
3.4	Data in existing BMMS is entered into BMS by RHD	
3.5	BMS manual for administrators and users is prepared	
3.6	BMS manual is explained to RHD staff by BMS administrators	
4. Necessary knowledge of bridge management is enhanced by RHD staff		
4.1	On the job trainings (OJTs) on bridge inspection / evaluation in model area(s) are conducted with Bridge inspection / evaluation manual	● Activity 4.1 – 4.5 are not implemented yet as of 15 th January 2016.
4.2	OJTs on prioritizing bridges to be repaired in model area(s) are conducted by utilization of BMS	
4.3	OJTs on selection of bridge rehabilitation / strengthening measures, cost estimation in model area(s) are conducted with Bridge rehabilitation / strengthening manual	
4.4	Advices on supervision of bridge rehabilitation / strengthening works are given by Expert	
4.5	Institutional capacity development plan is prepared	

2) One of activities for the generation of the project outputs, workshops (WSs) were conducted. The summary of WSs are the following. Detailed is shown in Appendix 1. WS minutes are attached as Appendix 2.

No	Name of WS	Date	Participants *1
1	WS1(A1-WS1): Towards the Establishment of Bridge Maintenance Cycle (BMC)	11 th Nov 2015 10:00-12:50	18
2	WS2 (A2-WS1): Development of Bridge Inspection Manual	13 th Dec 2015, 10:30-12:00	18
3	WS3 (A2-WS2): Development of Bridge Evaluation Manual	13 th Dec 2015, 12:30-14:00	18
4	WS4 (A1-WS2): Solution of Issues on Maintenance Work Implementation, Estimate of Annual Work Volume, Necessity & Securing Human Resources	10 th Jan 2016, 10:00-11:30	14
5	WS5 (A2-WS3): Case Study of Detailed Investigation of Load Capacity	10 th Jan 2016, 11:45-13:15	14
6	WS6 (A1-WS3): Consideration Regarding Pending Items"	17 th Jan 2016 10:00-11:30	18
7	WS7 (A1-WS4) : Flow of Bridge Maintenance Activities	17 th Jan 2016	17

		11:45-13:15	
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*1: Project members are included.

1-3 Achievement of Output

Indicators of Outputs		Achievement level
1.1	Documents of Bridge maintenance procedure and staff deployment are approved by XX	<ul style="list-style-type: none"> ● As of 15th January 2016, the achievement level of each indicator of outputs are not ready to be measured. ● "XX" will be replaced into words/numbers before the next 3rd JCC.
1.2	Bridge inspection based on the bridge maintenance cycle is commenced by RHD	
1.3	Data management by utilization of BMS is commenced by RHD	
1.4	Bridge maintenance plan (annual budget and work plans) in model area(s) is prepared	
2.1	Bridge inspection / evaluation manual is approved by XX	
2.2	Bridge rehabilitation / strengthening manual is approved by XX	
3.1	Data accessibility of BMS is improved	
3.2	BMS manual is approved by XX	
4.1	XX bridge inspection MT are trained	
4.2	XX bridge rehabilitation MT are trained	
4.3	XX BMS administrators are trained	
4.4	The human resource development plan is approved	

1-4 Achievement of the Project Purpose

Indicators of Outputs		Achievement level
1	Bridge maintenance cycle is commenced by RHD	As of 15 th January 2016, the achievement level of each indicator of outputs are not ready to be measured.
2	Necessary training based on the human resource development plan is conducted by Master Trainers (MT)	

1-5 Changes of Risks and Actions for Mitigation

- Risks are not confirmed so far, thus actions for mitigation are not taken.
- It is confirmed that pre-conditions are fulfilled.

1-6 Progress of Actions undertaken by JICA

- JICA Bangladesh played a center role in organizing the 1st JCC, such as communicating with Secretary to attend it as a chairperson.
- JICA informs the security information through e-mail and SNS promptly with consultants for ensuring consultants' safety. Furthermore, safety briefing for consultants is conducted on a regular basis.

1-7 Progress of Actions undertaken by Gov. of Bangladesh

- Secretary from the Ministry of communication attended the 1st and 2nd JCC as a chairperson.

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

- No activities for the progress of Environmental and Social Considerations are undertaken.

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

- Woman engineer has been assigned to the Project since the commencement of the Project.

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.)

- No remarkable/considerable issues are confirmed.

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

- Based on the PDM, the project activities have been implemented as planned.

3. Modification of the Project Implementation Plan

3-1 PO

- The information on the achievement of inputs and activities was additionally written in the PO Version 1. During the 2nd JCC, it is approved as a PO version 2.

3-2 Other modifications on detailed implementation plan

- It is confirmed that the detailed implementation plan has been modified based on the actual situation.

4. Preparation of Gov. of Bangladesh toward after completion of the Project

- No preparation has commenced for the project sustainability yet.

< II. Project Monitoring Sheet I & II >

- Project Monitoring Sheet I (PDM) & II (PO) approved by the 2nd JCC are attached as Appendix.

TO CR of JICA Bangladesh OFFICE

Project Title: BRIDGE MANAGEMENT CAPACITY DEVELOPMENT PROJECT**Version of the Sheet: Ver.3(Term: 10 July, 2015 – 2 March, 2018)****Name: Yoshimitsu HIYAMA****Title: Team Leader****Submission Date: 23rd Mar 2017****<I. Summary (all achievements are as of 15th July, 2016)>****1. Progress****1-1 Progress of Inputs****1-1-1 Japanese side****<Short-term experts dispatched to Bangladesh>**

Due to the unstable security reasons in Bangladesh since the beginning of July, short-term experts have not been allowed to get in Bangladesh. Therefore, the following record of short-term experts dispatched to Bangladesh has not changed compared to the record of the Monitoring Sheet Ver.3.

NO	Name	Title	Dispatched Period to Bangladesh
1	Yoshimitsu HIYAMA	Team Leader/Bridge Maintenance Plan	(1 st) 8 th Aug - 12 th Sep, 2015 (2 nd) 17 th Oct - 14 th Nov, 2015 (3 rd) 17 th Dec, 2015 - 13 th Feb, 2016 (4 th) 11 th Mar, 2016 - 15 th Apr, 2016
2	Ikuo HARAZAKI	Bridge Inspection	(1 st) 17 th Aug - 1 st Sep, 2015 (2 nd) 4 th Dec, 2015 - 6 th Feb, 2016 (3 rd) 4 th Mar - 16 th Apr, 2016
3	Toshiyuki KONISHI	Bridge Evaluation	(1 st) 20 th Aug - 2 nd Sep, 2015 (2 nd) 3 rd Dec - 19 th Dec, 2015 (3 rd) 14 th Jan - 30 th Jan, 2016 (4 th) 3 rd Mar - 18 th Mar, 2016 (5 th) 1 st Apr - 16 th Apr, 2016
4	Rikiya IIZUKA	Bridge Maintenance Plan (2)	(1 st) 9 th Aug - 4 th Sep, 2015 (2 nd) 8 th Jan - 19 th Mar, 2016 (3 rd) 20 th May - 9 th Jun, 2016
5	Kenichi HIDA	Detailed Survey	(1 st) 16 th Aug - 2 nd Sep, 2015 (2 nd) 31 st Dec, 2015 - 16 th Jan, 2016 (3 rd) 3 rd Mar - 19 th Mar, 2016
6	Yasuo KOSAKA	Bridge Rehabilitation - Retrofitting/Bridge Diagnosis (2)	(1 st) 16 th Aug - 1 st Sep, 2015 (2 nd) 5 th Nov - 30 th Dec, 2015 (3 rd) 2 nd Mar - 16 th Apr, 2016 (4 th) 7 th May - 2 nd Jul, 2016
7	Yukitomo TATSUMI	Cost Estimate	(1 st) 3 rd Dec - 19 th Dec, 2015 (2 nd) 15 th Mar - 13 th Apr, 2016 (3 rd) 9 th May - 2 nd Jul, 2016
8	Kengo MAKISHIMA	Bridge Management System	(1 st) 20 th Aug - 12 th Sep, 2015 (2 nd) 3 rd Dec - 19 th Dec, 2015 (3 rd) 14 th Jan - 13 th Feb, 2016 (4 th) 17 th Mar - 2 nd Apr, 2016 (5 th) 19 th May - 4 th Jun, 2016
9	Kanji OHNO	Bridge Management System (2)	(1 st) 22 nd Jan - 6 th Feb, 2016 (2 nd) 19 th Mar - 3 rd Apr, 2016 (3 rd) 17 th Jun - 1 st Jul, 2016
10	Chiaki YAMADA	Project Monitoring	(1 st) 23 rd Aug - 1 st Sep, 2015 (2 nd) 19 th Jan - 30 th Jan, 2016

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11	Hideaki YASASHI	Coordinator/Bridge Maintenance Plan (Assistance)	(1 st) 8 th Aug – 2 nd Sep, 2015 (2 nd) 5 th Nov – 21 st Nov, 2015 (3 rd) 14 th Jan – 30 th Jan, 2016 (4 th) 3 rd Mar – 19 th Mar, 2016
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(Remark: 1. Dispatched period shown in the above table is as of 15th July)

<Equipment and materials >

NO	Items	Qty	Unit price	Unit	Total amount
1	PC for local staff(Secretary and accountant)	2	32,700	Tk	65,400 Tk
2	PC and accessories for the System Manager	1	67,800	Tk	67,800 Tk

(Remark: Equipment and materials which have a durable years for 2 years and are more than JPY50,000 are listed.)

<Local Staff members (employed by the Project)>

NO	Name	Title of the Project	Engaged Period
1	Md.Abdullah Al Mahmud Bhuiyan	Bridge Engineer	17 th Nov 2015 – at present
2	To be determined	Technician	-
3	Mr. Anis Sharif	Interpreter/Coordinator	10 th Aug 2015 – at present
4	Ms. Swapna	Office cleaner	1 st Nov 2015 – at present

(Remark: Candidate for system engineer and a technician are under examined)

1-1-2 Bangladesh side

- Counterpart (C/P) personnel (from RHD) (“Core Member (CM)”in the Project).

Since the project commencement, necessary C/P and CM have been allocated, which have been contributing the better project outputs. PD, APD, PM and DPM (1-4) are not only C/P but CM, but the others (1-10) are only CM.

NO	Name	Title of the Project	Engaged Period
1	Parimal Bikash Sutradhar	ACE, Project Director (PD)	8 th Aug 2015 – at present
2	A.K.M. Manir Hossain Pathan, PEng.	SE, Additional Project Director (APD)	8 th Aug 2015 – at present
3	Md. Shafikul Islam	EE, Project Manager (PM)	8 th Aug 2015 – at present
4	Md. Sohel Rana	SDE, Deputy Project Manager (DPM)	8 th Aug 2015 – at present
5	Md.Shafiul Azam	EE, Database Division	8 th Aug 2015 – at present
6	Parveen Sultana	EE, RHD Training Centre	8 th Aug 2015 – 7 th January, 2016
7	Mohammed Shamim Al Mamun	Mymensingh/Habiganj Road Division	8 th Aug 2015 – at present
8	Mohammed Saifuddin	Comilla Road Division	8 th Aug 2015 – at present
9	Nazmul Hasan	Rajshahi Road Division	8 th Aug 2015 – at present
10	Md. Khaled Shaheed	Barisal Road Division	8 th Aug 2015 – at present

- Equipment and materials for the project office

NO	Items	Quantity	Unit
1	Office space (inside the training center)	2	room(s)
2	Office furniture (Refrigerator and water filter included)	2	set(s)

1-2 Progress of Activities

1) The table below includes the achievement of activities as of 15th July.

NO	Activity	Achievement level as of 15 th January, 2016	Achievement level as of 15 th July, 2016
1. Bridge maintenance framework is developed			
1.1	Actual condition of bridge	● Hearing on the actual condition of bridge	● The results of review on the actual condition of bridge maintenance of

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NO	Activity	Achievement level as of 15 th January, 2016	Achievement level as of 15 th July, 2016
	maintenance is reviewed	<p>maintenance with RHD headquarter staff, Manikganj division staff and Sirajganj division staff was carried out.</p> <ul style="list-style-type: none"> The condition of bridges in Manikganj division and Sirajganj division was inspected on August 20th and from August 23rd until August 24th respectively. Answers of the questionnaire (draft version) were submitted at the end of October, 2015 and actual condition of maintenance was reviewed and analyzed based on them. 	<p>RHD were arranged in Chapter 2 “ Current Situations of the Bridges and Culverts under RHD Jurisdiction” of “Bridge Maintenance Management Standard (Draft)” were explained at WS1 and WS9 (A1-WS5) -1 as the supplement of WS1.</p>
1.2	Problems / issues on bridge maintenance cycle are identified	<ul style="list-style-type: none"> Problems/issues on bridge maintenance cycle were identified and explained at the first workshop held on 11th of November, 2015. 	<ul style="list-style-type: none"> Based on bridge condition data of existing BMMS, the work volume of bridge maintenance was estimated and the basic policy of bridge maintenance was explained at WS13 (A1-WS6) held on March 27th, 2016.
1.3	Institutional framework of bridge maintenance is reviewed	<ul style="list-style-type: none"> Institutional framework of bridge maintenance was reviewed, and the result of review was explained at WS4 held on 10th of January, 2016. 	<ul style="list-style-type: none"> Recommendations on manpower and organization and recommendations on bridge maintenance fund were explained at WS13 (A1-WS6) held on March 27th, 2016. Furthermore the methodologies to enhance technical abilities were explained at WS16 (A1-WS7) held on April 10, 2016.
1.4	Documents of bridge maintenance procedure and standard of staff deployment are prepared	<ul style="list-style-type: none"> Documents of bridge maintenance procedure and standard of staff deployment on bridge inspection were prepared. 	<ul style="list-style-type: none"> Bridge maintenance procedure and staff deployment were explained at WS9 (A1-WS5) -2 held on 2nd February, 2016.
2. Bridge inspection / evaluation manual and Bridge rehabilitation / strengthening manual are developed			
2.1	Existing bridge maintenance manual is reviewed and issues/problems on the manual are analyzed	<ul style="list-style-type: none"> Existing bridge maintenance manuals were collected. Based on the answers of the questionnaire (draft version), existing manuals were analyzed. 	<ul style="list-style-type: none"> In consideration of the results of the analysis, "Bridge Inspection and Evaluation Manual" was introduced.
2.2	Bridge inspection / evaluation manual is updated (The achievement of Activity 2.2 is written in Activity 2.2.1 and Activity 2.2.2.)		

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NO	Activity	Achievement level as of 15 th January, 2016	Achievement level as of 15 th July, 2016
2.2.1	Bridge inspection / evaluation manual (Inspection) is updated	<ul style="list-style-type: none"> ● Results of the baseline survey submitted by RHD at the end of October was examined. ● WS2 (A2-WS1) named "Development of Bridge Inspection Manual" was conducted on 13th Dec. During WS, as the first step to modify the existing manual, the condition of bridge inspection in Japan was introduced. Furthermore, "Bridge Condition Survey Manual 2014" was reviewed, and contents of the manual need to be revised were discussed. ● Reviewing work for "Bridge Condition Survey Manual 2014" will be continued until the next WS in February. 	<ul style="list-style-type: none"> ● During WS6 (A1-WS3) "Consideration Regarding Pending Items" held on 17th January, the part of "Types of Defects and Rating" in the manual was discussed. ● WS9 (A1-WS5) -3 named "Review of existing Bridge Condition Survey Manual - 2014" was conducted on 4th February. During WS, "Bridge Condition Survey Manual 2014" was reviewed, and also Draft Contents of new Bridge Inspection Manual were discussed. ● During WS 10 (A2-WS4) named "Bridge Inspection Program and Procedure of Inspection" held on 13th March, Bridge Inspection Program, Composition of Inspection Team, Inspection Tools and Access Equipment, Procedure of Inspection, and Safety during Inspection in the manual were discussed. ● During WS 14 (A2-WS6) named "Development of Bridge Inspection and Evaluation Manual" held on 10th April, seven chapters and nine appendices were introduced and 1. Background, 2.Introduction, 3.1 Types of Inspection and Frequency, and 7. Recording of Inventory and Inspection Results were mostly discussed. ● During WS 18 (A2-WS8) named "Essential Points during Inspection of Bridges" held on 22nd May, which is the summary of guidelines for the Inspector for Periodic Inspection, was explained and discussed. ● Draft of Bridge Inspection and Evaluation Manual was almost completed.
2.2.2	Bridge inspection / evaluation manual (Evaluation) is prepared	<ul style="list-style-type: none"> ● Preparation of Bridge inspection / evaluation manual (Evaluation) is in progress. ● Following agendas were explained during the WS3 (A2-WS2), conducted 13th December, 2015. <ol style="list-style-type: none"> a. Purpose of Bridge Evaluation b. Brief review of 	<ul style="list-style-type: none"> ● During WS 11 (A2-WS5) named "Evaluation and Countermeasures" held on 13th March, 6.1 Evaluation by Bridge Element, 6.2 Evaluation of the Entire Bridge, 6.3 Detailed Investigation were explained and discussed. ● During WS 15 (A2-WS7) named "Development of Bridge Inspection and Evaluation Manual" held on 10th April, one chapter and three

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NO	Activity	Achievement level as of 15 th January, 2016	Achievement level as of 15 th July, 2016
		<p>Bridge Evaluation Method in practice by RHD</p> <p>c. Cases of emergency damage</p> <p>d. Detailed investigation of Bridges</p> <ul style="list-style-type: none"> ● The Case of Detailed Investigation of Load Capacity was explained during WS5, conducted on 10th January, 2016. ● Draft of the evaluation Manual will be prepared in May 2016. 	<p>appendices were introduced and</p> <ol style="list-style-type: none"> 1. Bridge and Culvert types, 2. Naming of Evaluation Category, 3. Unification of the naming, and 4. Impact level were explained and discussed. <ul style="list-style-type: none"> ● Draft of Bridge Inspection and Evaluation Manual was almost completed.
2.3	Bridge rehabilitation / strengthening manual is prepared (The achievement of Activity 2.3 is written in Activity 2.3.1 and Activity 2.3.2.)		
2.3.1	Bridge rehabilitation / strengthening manual (Rehabilitation/strengthening measures) is prepared	<ul style="list-style-type: none"> ● The implementation of the activity will be commenced in March, 2016. 	<ul style="list-style-type: none"> ● During WS 18 (A2-WS8) named "Rehabilitation and Strengthening" held on 22nd May, Part 1 Rehabilitation and Strengthening and Part 1-2 Routine Maintenance Works were explained and discussed. ● During WS 21 (A2-WS10) named "Development of Bridge Rehabilitation/Strengthening Manual" held on 19th June, one chapter and two appendices were introduced and a) Overview, b) Routine Maintenance Works, c) Minor Repair Works, d) Selection flow of Repair Methods and e) Major Repair Methods for different Defects were explained and discussed. ● Draft of Rehabilitation/Strengthening Manual will be completed in August 2016, yet bridge repair photos of Bangladesh are not enough.
2.3.2	Bridge rehabilitation / strengthening manual (Cost Estimate) is prepared	<ul style="list-style-type: none"> ● The implementation of the activity will be commenced in April, 2016. 	<ul style="list-style-type: none"> ● For the cost estimation manual, the WS19 was held on 22nd May and the WS 22 was held on 19th June. ● The draft cost estimation manual was almost completed in the WS 22.
2.4	Manuals for Bridge maintenance are explained to RHD staff by Master Trainers (MT)	<ul style="list-style-type: none"> ● The implementation of the activity will be commenced in OJT. 	
3. Bridge management system is developed			
3.1	Existing BMMS is	<ul style="list-style-type: none"> ● Existing BMMS opened 	<ul style="list-style-type: none"> ● This Activity had already

PM Form 3-1 Monitoring Sheet Summary

NO	Activity	Achievement level as of 15 th January, 2016	Achievement level as of 15 th July, 2016
	reviewed and analyzed	<p>to public was reviewed. Several points to be improved were identified in BMMS's function of "search" and "display result of search".</p> <ul style="list-style-type: none"> ● Reviewing BMMS was completed in September, 2015. JICA experts analyzed shortage of functions and usability of existing BMMS, and interviewed with BMMS division and MIS in RHD. JICA experts and RHD confirmed that it is impossible to improve current BMMS because of technical issue, and new BMS should be constructed as new program. 	completed in September, 2015.
3.2	Utilization of BMS is examined together by RHD	<ul style="list-style-type: none"> ● Examination of development of new BMS is in progress by RHD, with the supports of Japanese BMS experts. BMS basic design report ver.1 was submitted to BMMS division in December 2015. First workshop for BMS WS8 (A3-WS1) will be hold on 4th February 2016. 	<ul style="list-style-type: none"> ● WS8 (A3-WS1) was held on 4th February to discuss about "reviewing result of current BMMS", "explanation for Basic function of new BMS", "Formation and schedule of BMS construction team". Before this WS, BMS consultant (2) joined in the team. He is professional of System Management to construct computer program. ● WS 12 (A3-WS2) was held on 27th March. In this WS, "input form", "items", "scores", "weights", "coefficients", "outputted data", "user types and their authority were discussed". ● WS20 (A3-WS3) was held on 29th May to discuss about "Procedure of BMS" including who should approve the result of each step.
3.3	Function of BMS is defined and developed	<ul style="list-style-type: none"> ● Activity 3.3 – 3.6 are not implemented yet as of 15th January 2016 and these activities will be commenced from February. 	<ul style="list-style-type: none"> ● Our team including System construction team in Bangladesh is progressing with construction of BMS. Construction of "Database functions" is almost completed, and "Calculation functions" step are advancing.
3.4	Data in existing BMMS is entered into BMS by RHD		<ul style="list-style-type: none"> ● Activity 3.4 is not implemented yet as of completion of RELEASE version of BMS in September 2016.
3.5	BMS manual for		<ul style="list-style-type: none"> ● Activity 3.5 is implemented yet as

NO	Activity	Achievement level as of 15 th January, 2016	Achievement level as of 15 th July, 2016																				
	administrators and users is prepared		of completion of DEMO version of BMS in August 2016.																				
3.6	BMS manual is explained to RHD staff by BMS administrators		<ul style="list-style-type: none"> Activity 3.6 is implemented yet as of completion of RELEASE version of BMS in September 2016. 																				
4. Necessary knowledge of bridge management is enhanced by RHD staff																							
4.1	On the job trainings (OJTs) on bridge inspection / evaluation in model area(s) are conducted with Bridge inspection / evaluation manual	<ul style="list-style-type: none"> Activity 4.1 –4.5 are not implemented yet as of 15th January 2016. 	<ul style="list-style-type: none"> Detailed OJT plan was agreed <table border="1"> <tr> <td colspan="2">OJT</td> </tr> <tr> <td>Participants</td> <td>75 MT (65 EE+10HQ Staff)</td> </tr> <tr> <td>Period</td> <td>4 weeks</td> </tr> <tr> <td>Venue</td> <td>Mirpur T/C, Manikganj</td> </tr> <tr> <td>RHD issues</td> <td> <ul style="list-style-type: none"> Accommodation (25 participants)(Dhaka 3 wks, Manikganj 1 wk) Transportation for field work, necessary vehicles:6 (min 4 passengers) Daily allowance Lunch </td> </tr> <tr> <td colspan="2">Joint Training Course by MT (JTC)</td> </tr> <tr> <td>Participants</td> <td>SDE, SAE, (WS) from all SDs in each EE area, 18 from each SDO: min 3, DO:1AE, CO:1AE, ZO:1AE</td> </tr> <tr> <td>Period</td> <td>As soon as possible after OJT (within 2 weeks) 4 days for each half Zone *First Zone Block: Saturday to Tuesday *Second Zone Block: Tuesday to Friday *1day is for field work</td> </tr> <tr> <td>Venue</td> <td>Each Zone Office</td> </tr> <tr> <td>RHD issue</td> <td> <ul style="list-style-type: none"> Accommodation Transportation for field work, Daily allowance Lunch </td> </tr> </table>	OJT		Participants	75 MT (65 EE+10HQ Staff)	Period	4 weeks	Venue	Mirpur T/C, Manikganj	RHD issues	<ul style="list-style-type: none"> Accommodation (25 participants)(Dhaka 3 wks, Manikganj 1 wk) Transportation for field work, necessary vehicles:6 (min 4 passengers) Daily allowance Lunch 	Joint Training Course by MT (JTC)		Participants	SDE, SAE, (WS) from all SDs in each EE area, 18 from each SDO: min 3, DO:1AE, CO:1AE, ZO:1AE	Period	As soon as possible after OJT (within 2 weeks) 4 days for each half Zone *First Zone Block: Saturday to Tuesday *Second Zone Block: Tuesday to Friday *1day is for field work	Venue	Each Zone Office	RHD issue	<ul style="list-style-type: none"> Accommodation Transportation for field work, Daily allowance Lunch
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Participants	SDE, SAE, (WS) from all SDs in each EE area, 18 from each SDO: min 3, DO:1AE, CO:1AE, ZO:1AE																						
Period	As soon as possible after OJT (within 2 weeks) 4 days for each half Zone *First Zone Block: Saturday to Tuesday *Second Zone Block: Tuesday to Friday *1day is for field work																						
Venue	Each Zone Office																						
RHD issue	<ul style="list-style-type: none"> Accommodation Transportation for field work, Daily allowance Lunch 																						
4.2	OJTs on prioritizing bridges to be repaired in model area(s) are conducted by utilization of BMS		<ul style="list-style-type: none"> No activities are planned in this term. Detailed schedule of OJT is not finalized due to unacceptable Terrorism happened on 1st of July in Dhaka. The GOJ has been studying security situation and assurance plan of safety of JICA Experts in Bangladesh, the Consultant Team has been waiting instruction made by GOJ. The Consultant Team shall follow the instruction issued by GOJ. 																				
4.3	OJTs on selection of bridge rehabilitation / strengthening measures, cost estimation in model area(s) are conducted with Bridge rehabilitation /		<ul style="list-style-type: none"> No activities are planned in this term. The timing of prioritization of bridges for repair in the model area (Manikganj Division) by BMS is not clear due to above reason. 																				

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NO	Activity	Achievement level as of 15 th January, 2016	Achievement level as of 15 th July, 2016
	strengthening manual		
4.4	Advices on supervision of bridge rehabilitation / strengthening works are given by Expert		<ul style="list-style-type: none"> No activities are planned in this term. The condition for Advices on supervision of bridge rehabilitation / strengthening works by Expert is that contracts of bridge rehabilitation / strengthening works shall be made by RHD, after then JICA Expert can give advices on supervision activities by RHD staffs. When the Team gets information of contract on bridge repair works, perhaps the Bridge Rehabilitation Expert will make recommendation on supervision works for bridge repair works after site investigation.
4.5	Institutional capacity development plan is prepared		<ul style="list-style-type: none"> It is under preparation by the JICA consultant in cooperation with C/P.

The 1st training in Japan was conducted from 16th to 29th April 2016. 8 participants who played center roles in the Project participated in the training. Participants are shown in the list below.

NO	Name	Title
1	Parimal Bikash Sutradhar	Project Director
2	A.K.M. Manir Hossain Pathan	Additional Project Director
3	Md. Shafikul Islam	Project Manager
4	Md. Sohel Rana	Deputy Project Manager
5	Mohammed Shamim Al Mamun	Executive Engineer
6	Mohammad Saifuddin	Executive Engineer
7	Najmul Hasan	Executive Engineer
8	Md. Khaled Shaheed	Executive Engineer

The training schedule is as below.

Date	Time	Contents	Place
16 th Apr		Departure from Dhaka	
17 th Apr		Arrival at Tokyo	
18 th Apr	10:00-12:00	JICA Briefing	JICA Tokyo International Center (TIC)
	13:00-14:00	Presentation on Issues	JICA TIC
	14:00-17:00	Lecture[1.Project Cycle Management]	JICA TIC
19 th Apr	10:00-12:00	Lecture[2.Project Cycle Management]	JICA TIC
	13:30-15:30	Lecture[Bridge Maintenance Policy in Japan]	JICA TIC
20 th Apr	10:00-12:00	Lecture[Utilization of Training Centre]	NEXCO€ Engineering Takasaki TTC
	13:30-16:30	Site visit	
21 st Apr	10:00-12:00	State of the Art on Bridge Maintenance	Public Works Research Institute under Ministry of Land, Infrastructure, Transport and Tourism
	13:30-15:30	Site visit	
22 nd Apr	10:00-12:00	Visit to Bearing Fabricator	BBM Funabashi Factory
	13:30-15:30	Testing Equipment on Steel Members	Yokogawa Bridge, R&L

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23 rd Apr	All day	Free time	-
24 th Apr	8:00-10:30	Haneda Airport - Nagasaki Airport	-
	12:00-17:00	Nagasaki Bus Tour	-
25 th Apr	10:00-12:00	lecture[Road Protector System & 3D Measurement	Nagasaki University
	13:30-15:30	Site visit (NSD Equipment)	
	16:00-18:00	Visit to major bridges in Nagasaki	-
26 th Apr	9:00-13:00	Visit to Repair Works Site	Nagasaki Prefecture
	13:00-18:30	Nagasaki Airport - Haneda Airport	-
27 th Apr	10:00-11:30	Bridge Maintenance Management in Yokohama City	Yokohama City
	13:00-14:00	Visit to Bridge Inspection Site or Repair Works Site	
	16:00-18:00	Lecture[Guidance for Action Plan]	JICA TIC
28 th Apr	9:00-12:00	Making of Action Plan	JICA TIC
	13:00-14:30	Presentation of Action Plan	JICA TIC
	14:30-15:30	Comments & Presentation of Certificate	JICA TIC
29 th Apr		Departure from Tokyo	

2) One of the activities for the generation of the project outputs, workshops (WSs) were conducted. Details of WSs are the following.

No	Name of WS	Date	Participants *1
1	WS1(A1-WS1): Towards the Establishment of Bridge Maintenance Cycle (BMC)	11 th Nov 2015 10:00 -12:50	15
2	WS2 (A2-WS1): Development of Bridge Inspection Manual	13 th Dec 2015, 10:30 -12:00	18
3	WS3 (A2-WS2): Development of Bridge Evaluation Manual	13 th Dec 2015, 12:30 -14:00	18
4	WS4 (A1-WS2): Solution of Issues on Maintenance Work Implementation, Estimate of Annual Work Volume, Necessity & Securing Human Resources	10 th Jan 2016, 10:00 -11:30	14
5	WS5 (A2-WS3): Case Study of Detailed Investigation of Load Capacity	10 th Jan 2016, 11:45 -13:15	14
6	WS6 (A1-WS3): Consideration Regarding Pending Items"	17 th Jan 2016 10:15 -13:15	18
7	WS7 (A1-WS4): Flow of Bridge Maintenance Activities	17 th Jan 2016 13:45 -15:10	17
8	WS8 (A3-WS1): Program Construction of Bridge Management System (BMS)	4 th Feb 2016 10:10 -12:00	16
9	WS9 (A1-WS5): 1) Bridge Maintenance Management Standard (Pre-Draft) 2) Capacity Development Training Plan 3) Review of Existing Bridge Condition Survey Manual	4 th Feb 2016 12:10 – 15:25	16
10	WS10 (A2-WS4): Inspection Procedure, Safety during Inspection & Recording, Contents/Edition Policy of Bridge Inspection Manual	13 th Mar 2016 10:15 – 11:35	16
11	WS11 (A2-WS5): 1) Method of Evaluation of Bridge Element Types & Evaluation Criteria 2) Method of Evaluation of Entire Bridge 3) Judgment of Need for Detailed Investigation	13 th Mar 2016 11:45 – 13:15	16
12	WS12 (A3-WS2): Confirmation of Requirements of BMS(Items of INPUT/OUTPUT)	27 th Mar 2016 10:10 – 12:00	19
13	WS13 (A1-WS6): Bridge Maintenance Management Standard (Draft ver.1)	27 th Mar 2016 12:30 - 13:45	17

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No	Name of WS	Date	Participants *1
14	WS14 (A2-WS6): Bridge Inspection/Evaluation Manual [Inspection] (Draft), Final Draft of Manual Requirement of Addition/Removal/Modification of Contents	10 th Apr 2016 10:05 – 11:55	18
15	WS15 (A2-WS7): Bridge Inspection/Evaluation Manual [Evaluation] A) Bridge and Culvert Types B) Naming of Evaluation Category (Evaluation of Bridge Element Types) C) Unification of Naming (Evaluation of Entire Bridge) D) Impact Level (Evaluation of Entire Bridge)	10 th Apr 2016 12:10 - 13:20	18
16	WS16 (A1-WS7): Bridge Maintenance Management Standard, Enhancement of Technical Ability A) Significance of Enhancement of Technical Ability B) Methodology of Enhancement of Technical Ability C) Internal Activities D) Other Activities	10 th Apr 2016 13:50 – 14:25	16
17	WS17 (A1-WS8): Bridge Maintenance Management Standard (Draft ver.2), Recommendations for Creating Durable Bridges A) 5.1 Planning of Durable Bridges B) 5.2 Design of Durable Bridges	10 th Apr 2016 14:30 - 15:45	16
18	WS18 (A2-WS8) : Development of Bridge Rehabilitation/Strengthening Manual 1) Overview of Repair Works, Principles & Methods 2) Examples of Rehabilitation/ Strengthening Methods 3) Application and Quality Control 4) Routine Maintenance Works	22 nd May 2016 10:00 – 11:40	13
19	WS19 (A3-WS9) : 1) Development of Bridge Rehabilitation/Strengthening Manual; Part 2 : Cost Estimation 2) Development of Bridge Inspection Manual: Essential Viewpoints during Inspection of Bridges.	22 nd May 2016 12:10 – 13:35	13
20	WS20 (A3-WS3): Procedure and Function of Bridge Management System (BMS)	29 th May 2016 10:10 – 13:02	16
21	WS21 (A2-WS10): Development of Bridge Rehabilitation/Strengthening Manual [Method]	19 th Jun 2016 12:10 – 13:55	18
22	WS22 (A2-WS11): Development of Bridge Rehabilitation/Strengthening Manual; Part 2 : Cost Estimation	19 th Jun 2016 13:56 – 14:55	18

*1: Project members are included.

1-3 Achievement of Output

1) Replacement of XX in Outputs

“XX” in Outputs were replaced into words/numbers. It was agreed by both Bangladesh and Japanese sides (during JCC).

Indicators of Outputs		
	Original PDM	PDM which XXX were replaced into words/numbers
1.1	Documents of Bridge maintenance procedure and staff deployment are approved by XX	Documents of Bridge maintenance procedure and staff deployment are approved by RHD.
1.2	Bridge inspection based on the bridge maintenance cycle is commenced by RHD	
1.3	Data management by utilization of BMS is commenced by RHD	
1.4	Bridge maintenance plan (annual budget and work plans) in model area(s) is prepared	

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2.1	Bridge inspection / evaluation manual is approved by XX	Bridge inspection / evaluation manual is approved by RHD
2.2	Bridge rehabilitation / strengthening manual is approved by XX	Bridge rehabilitation / strengthening manual is approved by RHD
3.1	Data accessibility of BMS is improved	
3.2	BMS manual is approved by XX	BMS manual is approved by RHD
4.1	XX bridge inspection MT are trained	75 bridge inspection MT are trained
4.2	XX bridge rehabilitation MT are trained	75 bridge rehabilitation MT are trained
4.3	XX BMS administrators are trained	75 BMS administrators are trained
4.4	The human resource development plan is approved	

2) Achievement level of Outputs

Indicators of Outputs		Achievement level
		As of 15 th July 2016
1.1	Documents of Bridge maintenance procedure and staff deployment are approved by RHD	The achievement level of each indicator of outputs are not ready to be measured.
1.2	Bridge inspection based on the bridge maintenance cycle is commenced by RHD	
1.3	Data management by utilization of BMS is commenced by RHD	
1.4	Bridge maintenance plan (annual budget and work plans) in model area(s) is prepared	
2.1	Bridge inspection / evaluation manual is approved by RHD	
2.2	Bridge rehabilitation / strengthening manual is approved by RHD	
3.1	Data accessibility of BMS is improved	
3.2	BMS manual is approved by RHD	
4.1	75 bridge inspection MT are trained	
4.2	75 bridge rehabilitation MT are trained	
4.3	75 BMS administrators are trained	
4.4	The human resource development plan is approved	

1-4 Achievement of the Project Purpose

Indicators of Outputs		Achievement level
1	Bridge maintenance cycle is commenced by RHD	As of 15 th July 2016, the achievement level of each indicator of project purpose are not ready to be measured.
2	Necessary training based on the human resource development plan is conducted by Master Trainers (MT)	

1-5 Changes of Risks and Actions for Mitigation

- As JICA experts have not been allowed to travel to Bangladesh since July due to the security reason so pre-conditions are not fulfilled.

1-6 Progress of Actions undertaken by JICA

- JICA Bangladesh played a center role in organizing the 1st and 2nd JCC, such as communicating with Secretary to attend it as chairperson. (to be updated for the 3rd JCC)
- JICA informed the security information through e-mail and SMS promptly to consultants for ensuring consultants' safety. Furthermore, safety briefing for consultants is conducted on a regular basis.

1-7 Progress of Actions undertaken by Gov. of Bangladesh

- Secretary of Road Transport and Highways Division from the Ministry of Road Transport and

Bridges attended the 1st and 2nd JCC as chairperson.

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

- No activities for the progress of Environmental and Social Considerations are undertaken.

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

- Female engineer had been assigned to the Project since the commencement of the Project.

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.)

- Current remarkable concern is that the TPP has not been approved by Bangladesh side yet. Given that the TPP is not approved, travelling allowance such as transportation costs, daily allowance and accommodation costs for OJT participants cannot be secured. As no TPP is approved, no funds are available, thus, the immediate approval process of the TPP should be executed and completed as soon as possible.
- According to RHD, RHD has already sent the revised TPP to the Ministry. Its secretary will sign the TPP and send it to Planning Commission (Ministry of planning). The Planning Commission will approve the TPP as a final step. There is no certainty about the required time in this process. It might take even one or two months.
- The situation of the approval process will be confirmed during the 3rd JCC.

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

- Based on the PDM, the project activities have been delayed due to the security reason. Plan how to catch up activities (for instance a change of the time schedule) delayed will be one of agendas for 3rd JCC.

3. Modification of the Project Implementation Plan

3-1 PO

- The information on the achievement of inputs and activities was additionally written in the PO Version 1. During the 2nd JCC, it is approved as a PO version 2.

3-2 Other modifications on detailed implementation plan

- It is confirmed that the detailed implementation plan has been modified based on the actual situation.

4. Preparation of Gov. of Bangladesh toward after completion of the Project

- No preparation has commenced for the project sustainability yet.

<II. Project Monitoring Sheet I & II>

- The Project Monitoring Sheet I (PDM) & II (PO) prepared by the project was submitted to JICA through E-mail.

TO CR of JICA Bangladesh OFFICE**Project Title: BRIDGE MANAGEMENT CAPACITY DEVELOPMENT PROJECT****Version of the Sheet: Ver.4¹ (Term: 10 July, 2015 – 02 March, 2018)****Name: Yoshimitsu HIYAMA****Title: Team Leader****Submission Date: 23rd Mar 2017****<I. Summary (all achievements are as of 15th February, 2017)>****1. Progress****1-1 Progress of Inputs****1-1-1 Japanese side****<Short-term experts dispatched to Bangladesh>**

Short-term experts have been dispatched to Bangladesh almost as planned. Since July 2016, short-term experts have not been allowed to get in Bangladesh due to the security reasons.

NO	Name	Title	Dispatched Period to Bangladesh
1	Yoshimitsu HIYAMA	Team Leader/Bridge Maintenance Plan	(1 st) 8 th Aug - 12 th Sep, 2015 (2 nd) 17 th Oct - 14 th Nov, 2015 (3 rd) 17 th Dec, 2015 - 13 th Feb, 2016 (4 th) 11 th Mar, 2016 - 15 th Apr, 2016 (5 th) 23 rd Jan, 2017 – 1 st Feb, 2017
2	Ikuo HARAZAKI	Bridge Inspection	(1 st) 17 th Aug - 1 st Sep, 2015 (2 nd) 4 th Dec, 2015 - 6 th Feb, 2016 (3 rd) 4 th Mar - 16 th Apr, 2016
3	Toshiyuki KONISHI	Bridge Evaluation	(1 st) 20 th Aug - 2 nd Sep, 2015 (2 nd) 3 rd Dec - 19 th Dec, 2015 (3 rd) 14 th Jan - 30 th Jan, 2016 (4 th) 3 rd Mar - 18 th Mar, 2016 (5 th) 1 st Apr - 16 th Apr, 2016
4	Rikiya IIZUKA	Bridge Maintenance Plan (2)	(1 st) 9 th Aug - 4 th Sep, 2015 (2 nd) 8 th Jan - 19 th Mar, 2016 (3 rd) 20 th May - 9 th Jun, 2016
5	Kenichi HIDA	Detailed Survey	(1 st) 16 th Aug - 2 nd Sep, 2015 (2 nd) 31 st Dec, 2015 - 16 th Jan, 2016 (3 rd) 3 rd Mar - 19 th Mar, 2016
6	Yasuo KOSAKA	Bridge Rehabilitation Strengthening/Bridge Diagnosis (2)	(1 st) 16 th Aug - 1 st Sep, 2015 (2 nd) 5 th Nov - 30 th Dec, 2015 (3 rd) 2 nd Mar - 16 th Apr, 2016 (4 th) 7 th May - 2 nd Jul, 2016
7	Yukitomo TATSUMI	Cost Estimate	(1 st) 3 rd Dec - 19 th Dec, 2015 (2 nd) 15 th Mar - 13 th Apr, 2016 (3 rd) 9 th May - 2 nd Jul, 2016
8	Kengo MAKISHIMA	Bridge Management System	(1 st) 20 th Aug - 12 th Sep, 2015 (2 nd) 3 rd Dec - 19 th Dec, 2015 (3 rd) 14 th Jan - 13 th Feb, 2016 (4 th) 17 th Mar - 2 nd Apr, 2016 (5 th) 19 th May - 4 th Jun, 2016 (6 th) 23 rd Jan, 2017 – 1 st Feb, 2017
9	Kanji OHNO	Bridge Management System (2)	(1 st) 22 nd Jan - 6 th Feb, 2016 (2 nd) 19 th Mar - 3 rd Apr, 2016

¹ Version 3 is as of 15th July.

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			(3 rd) 17 th Jun – 1 st Jul, 2016
10	Chiaki YAMADA	Project Monitoring	(1 st) 23 rd Aug – 1 st Sep, 2015 (2 nd) 19 th Jan – 30 th Jan, 2016 (3 rd) 18 th Feb – 22 nd Feb, 2017
11	Hideaki YASASHI	Coordinator/Bridge Maintenance Plan (Assistance)	(1 st) 8 th Aug – 2 nd Sep, 2015 (2 nd) 5 th Nov – 21 st Nov, 2015 (3 rd) 14 th Jan – 30 th Jan, 2016 (4 th) 3 rd Mar – 19 th Mar, 2016 (5 th) 23 rd Jan, 2017 – 1 st Feb, 2017

(Remark: 1. Dispatched period shown in the above table is as of 15th July)

<Equipment and materials >

NO	Items	Qty	Unit price	Unit	Total amount
1	PC for local staff(Secretary and accountant)	2	32,700	Tk	65,400Tk
2	PC and accessories for the System Manager	1	67,800	Tk	67,800 Tk

(Remark: Equipment and materials which have a durable years for 2 years and are more than JPY50,000 are listed.)

<Local Staff members (employed by the Project)>

NO	Name	Title of the Project	Engaged Period
1	Md.Abdullah Al Mahmud Bhuiyan	Bridge Engineer	17 th Nov 2015 – at present
2	Mr. Anis Sharif	Interpreter/Coordinator	10 th Aug 2015 – at present
3	Ms. Swapna	Office cleaner	1 st Nov 2015 – at present

(Remark: Candidate for system engineer and a technician are under examined)

1-1-2 Bangladesh side

- Counterpart (C/P) personnel (from RHD) (“Core Member (CM)”in the Project).

Since the project commencement, necessary C/P and CM have been allocated, which have been contributing the better project outputs. PD, APD, PM and DPM are not only C/P but CM, but the others are only CM.

NO	Name	Title	Engaged Period
1	Rowshan Ara Khanam	Project Director & Additional Chief Engineer, Bridge management Wing	22 nd January 2017 – at present
2	Mohammad Shabbir Hasan Khan	Superintending Engineer, Planning & Data Circle	10 th January 2017 – at present
3	A.K.M. Manir Hossain Pathan, PEng.	Superintending Engineer, Procurement Circle, Former Additional Project Director (APD)	8 th Aug 2015 – at present
4	A.K. Shamsuddin Ahmed Nannu	Project Manager & Executive Engineer, BMMS Division	5 th October 2016 – at present
5	Md. Shafikul Islam	Executive Engineer, Sunamganj Road Division, Former Project Manager (PM)	8 th Aug 2015 – at present
6	Santanu Palit	Deputy Project Manager & Sub-Divisional Engineer, BMMS Sub-Division	1 st November 2016 – at present
7	ShiShir Kanti Routh	Superintending Engineer, 3 rd Shitalakhya Bridge Project	2 nd June 2016 – at present
8	Md. Shafiu Azam	Executive Engineer, Data Base Division	8 th Aug 2015 – at present
9	Mohammed Shamim Al Mamun	Executive Engineer, Habiganj Road Division	8 th Aug 2015 – at present
10	Mohammed Saifuddin	Executive Engineer, Comilla Road	8 th Aug 2015 – at present

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		Division	
11	Nazmul Hasan	Executive Engineer, Rajshahi Road Division, Rajshahi Road Division	8 th Aug 2015 – at present
12	Md. Khaled Shaheed	Executive Engineer, Barisal Road Division	8 th Aug 2015 – at present
13	Mohammad Moniruzzaman	Executive Engineer, Road Design & Standard Division	2 nd June 2016 – at present
14	Abdur Rahman Kaoser	Executive Engineer, Bridge Design Division - 3	2 nd June 2016 – at present
Former core members are following.			
/	Parimal Bikash Sutradhar	ACE, Project Director (PD)	8 th Aug 2015 – 20 th January 2017
/	Md. Sohel Rana	SDE, Deputy Project Manager (DPM)	8 th Aug 2015 – 1 st June 2016
/	Parveen Sultana	EE, RHD Training Centre	8 th Aug 2015 – 7 th January, 2016

● **Equipment and materials for the project office**

NO	Items	Quantity	Unit
1	Office space (inside the training center)	2	room(s)
2	Office furniture (Refrigerator and water filter included)	2	set(s)

1-2 Progress of Activities

1) The table below includes the achievement of activities as of 15th January, 2016, 15th July, 2016 and 15th February, 2017

NO	Activity	Achievement level as of 15 th January, 2016	Achievement level as of 15 th July, 2016 VERSION 3	Achievement level as of 15 th February, 2017 VERSION 4
1. Bridge maintenance framework is developed				
1.1	Actual condition of bridge maintenance is reviewed	<ul style="list-style-type: none"> Hearing on the actual condition of bridge maintenance with RHD headquarter staff, Manikganj division staff and Sirajganj division staff was carried out. The condition of bridges in Manikganj division and Sirajganj division was inspected on August 20th and from August 23rd until August 24th respectively. Answers of the questionnaire (draft version) were submitted at the end of October, 2015 and actual condition of maintenance was reviewed and analyzed based on them. 	<ul style="list-style-type: none"> The results of review on the actual condition of bridge maintenance of RHD were arranged in Chapter 2 “Current Situations of the Bridges and Culverts under RHD Jurisdiction” of “Bridge Maintenance Management Standard (Draft)” were explained at WS1 and WS9(A1-WS5)-1 as the supplement of WS1. 	<ul style="list-style-type: none"> Activities in Output 1 are completed.
1.2	Problems / issues on bridge maintenance cycle are identified	<ul style="list-style-type: none"> Problems/issues on bridge maintenance cycle were identified and explained at the first workshop held on 11th of November, 2015. 	<ul style="list-style-type: none"> Based on bridge condition data of existing BMMS, the work volume of bridge maintenance was estimated and the basic policy of bridge maintenance was explained at WS13 (A1-WS6) held on March 27, 2016. 	
1.3	Institutional framework of bridge maintenance is reviewed	<ul style="list-style-type: none"> Institutional framework of bridge maintenance was reviewed, and the result of review was explained at WS4 held on 10th of January, 2016. 	<ul style="list-style-type: none"> Recommendations on manpower and organization and recommendations on bridge maintenance fund were explained at WS13 (A1-WS6) held on March 27, 2016. Furthermore the methodologies to enhance technical abilities were explained at WS16 (A1-WS7) held on April 10, 	

NO	Activity	Achievement level as of 15 th January, 2016	Achievement level as of 15 th July, 2016 VERSION 3	Achievement level as of 15 th February, 2017 VERSION 4
1.4	Documents of bridge maintenance procedure and standard of staff deployment are prepared	<ul style="list-style-type: none"> Documents of bridge maintenance procedure and standard of staff deployment on bridge inspection were prepared. 	2016. <ul style="list-style-type: none"> Bridge maintenance procedure and staff deployment were explained at WS9 (A1-WS5)-2 held on 2nd February, 2016. 	
2. Bridge inspection / evaluation manual and Bridge rehabilitation / strengthening manual are developed				
2.1	Existing bridge maintenance manual is reviewed and issues/problems on the manual are analyzed	<ul style="list-style-type: none"> Existing bridge maintenance manuals were collected. Based on the answers of the questionnaire (draft version), existing manuals were analyzed. 	<ul style="list-style-type: none"> In consideration of the results of the analysis, "Bridge Inspection and Evaluation Manual" was introduced. 	<ul style="list-style-type: none"> Activities in Output 2.1 are completed.
2.2 Bridge inspection / evaluation manual is updated (The achievement of Activity 2.2 is written in Activity 2.2.1 and Activity 2.2.2.)				
2.2.1	Bridge inspection / evaluation manual (Inspection) is updated	<ul style="list-style-type: none"> Results of the baseline survey submitted by RHD at the end of October was examined. WS2 (A2-WS1) named "Development of Bridge Inspection Manual" was conducted on 13th Dec. During WS, as the first step to modify the existing manual, the condition of bridge inspection in Japan was introduced. Furthermore, "Bridge Condition Survey Manual 2014" was reviewed, and contents of the manual need to be revised were discussed. Reviewing work for "Bridge Condition Survey Manual 2014" will be continued until the next WS in February. 	<ul style="list-style-type: none"> During WS6 (A1-WS3) "Consideration Regarding Pending Items" held on 17th January, the part of "Types of Defects and Rating" in the manual was discussed. WS9 (A1-WS5)-3 named "Review of existing Bridge Condition Survey Manual - 2014" was conducted on 4th February. During WS, "Bridge Condition Survey Manual 2014" was reviewed, and also Draft Contents of new Bridge Inspection Manual – 2016 were discussed. During WS 10 (A2-WS4) named "Bridge Inspection Program and Procedure of Inspection" held on 13th March, Bridge Inspection Program, Composition of Inspection Team, Inspection Tools 	<ul style="list-style-type: none"> Draft of Bridge Inspection and Evaluation Manual was completed.

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NO	Activity	Achievement level as of 15 th January, 2016	Achievement level as of 15 th July, 2016 VERSION 3	Achievement level as of 15 th February, 2017 VERSION 4
			<p>and Access Equipment, Procedure of Inspection, and Safety during Inspection in the manual were discussed.</p> <ul style="list-style-type: none"> ● During WS 14 (A2-WS6) named “Development of Bridge Inspection and Evaluation Manual” held on 10th April, seven chapters and nine appendices were introduced and 1. Background, 2.Introduction, 3.Types of Inspection and Frequency, and 7. Recording of Inventory and Inspection Results were mostly discussed. ● During WS 18 (A2-WS8) named “Essential Points during Inspection of Bridges” held on 22nd May, which is the summary of guidelines for the Inspector for Periodic Inspection, was explained and discussed. ● Draft of Bridge Inspection and Evaluation Manual was almost completed. 	
2.2.2	<p>Bridge inspection / evaluation manual (Evaluation) prepared is</p>	<ul style="list-style-type: none"> ● Preparation of Bridge inspection / evaluation manual (Evaluation) is in progress. ● Following agendas were explained during the WS3 (A2-WS2), conducted 13th December, 2015. <ol style="list-style-type: none"> a. Purpose of Bridge Evaluation b. Brief review of Bridge Evaluation Method in practice by RHD c. Cases of emergency damage d. Detailed investigation of Bridges ● The Case of Detailed Investigation of Load Capacity was explained during 	<ul style="list-style-type: none"> ● During WS 11 (A2-WS5) named “Evaluation and Countermeasures” held on 13th March, 6.1 Evaluation by Bridge Element, 6.2 Evaluation of the Entire Bridge, 6.3 Detailed Investigation were explained and discussed. ● During WS 15 (A2-WS7) named “Development of Bridge Inspection and Evaluation Manual” held on 10th April, one chapter and three appendices were introduced and 1.Bridge and Culvert types, 	<ul style="list-style-type: none"> ● Draft of Bridge Inspection and Evaluation Manual was completed.

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NO	Activity	Achievement level as of 15 th January, 2016	Achievement level as of 15 th July, 2016 VERSION 3	Achievement level as of 15 th February, 2017 VERSION 4
		<p>WS5, conducted on 10th January, 2016.</p> <ul style="list-style-type: none"> ● Draft of the evaluation Manual will be prepared in May 2016. 	<p>2.Naming of Evaluation Category, 3.Unification of the naming, and 4.Impact level were explained and discussed.</p> <ul style="list-style-type: none"> ● Draft of Bridge Inspection and Evaluation Manual was almost completed. 	
2.3	Bridge rehabilitation / strengthening manual is prepared (The achievement of Activity 2.3 is written in Activity 2.3.1 and Activity 2.3.2.)			<ul style="list-style-type: none"> ● See the achievement of 2.3.1 and 2.3.2.
2.3.1	Bridge rehabilitation / strengthening manual (Rehabilitation/strengthening measures) is prepared	<ul style="list-style-type: none"> ● The implementation of the activity will be commenced in March, 2016. 	<ul style="list-style-type: none"> ● During WS 18 (A2-WS8) named “Rehabilitation and Strengthening” held on 22nd May, Part 1 Rehabilitation and Strengthening and Part 1-2 Routine Maintenance Works were explained and discussed. ● During WS 21 (A2-WS10) named “Development of Bridge Rehabilitation/Strengthening Manual” held on 19th June, one chapter and two appendices were introduced and a)Overview, b)Routine Maintenance Works, c)Minor Repair Works, d)Selection flow of Repair Methods and e)Major Repair Methods for different Defects were explained and discussed. ● Draft of Rehabilitation/Strengthening Manual will be completed in August 2016, yet bridge repair photos of Bangladesh are not enough. 	<ul style="list-style-type: none"> ● Draft of Rehabilitation/Strengthening Manual was completed.
2.3.2	Bridge rehabilitation / strengthening manual (Cost Estimate) is	<ul style="list-style-type: none"> ● The implementation of the activity will be commenced in April, 2016. 		<ul style="list-style-type: none"> ● The draft cost estimation manual was completed.

NO	Activity	Achievement level as of 15 th January, 2016	Achievement level as of 15 th July, 2016 VERSION 3	Achievement level as of 15 th February, 2017 VERSION 4
	prepared		<ul style="list-style-type: none"> The draft cost estimation manual was almost completed in the WS 22. 	
2.4	Manuals for Bridge maintenance are explained to RHD staff by Master Trainers (MT)	<ul style="list-style-type: none"> The implementation of the activity will be commenced after OJT. 		<ul style="list-style-type: none"> This activity will commence after OJT.
3. Bridge management system is developed				
3.1	Existing BMMS is reviewed and analyzed	<ul style="list-style-type: none"> Existing BMMS opened to public was reviewed. Several points to be improved were identified in BMMS's function of "search" and "display result of search". Reviewing BMMS was completed in September, 2015. JICA experts analyzed shortage of functions and usability of existing BMMS, and interviewed with BMMS division and MIS in RHD. JICA experts and RHD confirmed that it is impossible to improve current BMMS because of technical issue, and new BMS should be constructed as new program. 	<ul style="list-style-type: none"> This Activity had already completed in September, 2015. 	-----
3.2	Utilization of BMS is examined together by RHD	<ul style="list-style-type: none"> Examination of development of new BMS is in progress by RHD, with the supports of Japanese BMS experts. BMS basic design report ver.1 was submitted to BMMS division in December 2015. First workshop for BMS WS8 (A3-WS1) will be hold on 4th February 2016. 	<ul style="list-style-type: none"> WS8(A3-WS1) was held on 4th February to discuss about "reviewing result of current BMMS", "explanation for Basic function of new BMS", "Formation and schedule of BMS construction team". Before this WS, BMS consultant (2) joined in the team. He is professional of System Management to construct computer program. WS 12(A3-WS2) was held on 	-----

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NO	Activity	Achievement level as of 15 th January, 2016	Achievement level as of 15 th July, 2016 VERSION 3	Achievement level as of 15 th February, 2017 VERSION 4
			<p>27th March. In this WS, "input form", "items", "scores", "weights", "coefficients", "outputted data", "user types and their authority were discussed".</p> <ul style="list-style-type: none"> ● WS20 (A3-WS3) was held on 29th May to discuss about "Procedure of BMS" including who should approve the result of each step. 	
3.3	Function of BMS is defined and developed	<ul style="list-style-type: none"> ● Activity 3.3 – 3.6 are not implemented yet as of 15th January 2016 and these activities will be commenced from February. 	<ul style="list-style-type: none"> ● Our team including System construction team in Bangladesh is progressing with construction of BMS. Construction of "Database functions" is almost completed, and "Calculation functions" step are advancing. 	<ul style="list-style-type: none"> ● WS23(A3-WS4) was held on 29th January to show and discuss about function of BMS including "Database function", "Calculation function of Bridge Category" and "Calculation function of Remedy measure and cost" by live DEMO (actual operation) of new BMS. ● C/P gave some question and many idea to improve new BMS. Our team is progressing new BMS based on them.
3.4	Data in existing BMMS is entered into BMS by RHD		<ul style="list-style-type: none"> ● Activity 3.4 is not implemented yet as of completion of RELEASE version of BMS in September 2016. 	<ul style="list-style-type: none"> ● Activity 3.4 is not implemented yet as of completion of BMS in May 2017.
3.5	BMS manual for administrators and users is prepared		<ul style="list-style-type: none"> ● Activity 3.5 is implemented yet as of completion of DEMO version of BMS in August 2016. 	<ul style="list-style-type: none"> ● Activity 3.5 is implemented yet as of completion of DEMO version of BMS in February 2017. DEMO version of BMS is improved based on opinion in WS23.
3.6	BMS manual is explained to RHD staff by BMS administrators		<ul style="list-style-type: none"> ● Activity 3.6 is implemented yet as of completion of RELEASE version of BMS in September 2016. 	<ul style="list-style-type: none"> ● Section of "How to Use" in manual was explained by our team in WS23.

NO	Activity	Achievement level as of 15 th January, 2016	Achievement level as of 15 th July, 2016 VERSION 3	Achievement level as of 15 th February, 2017 VERSION 4																															
				<ul style="list-style-type: none"> Section of "Logical Explanation" in manual is not implemented yet as of completion of DEMO version of BMS in February 2017. 																															
<p>4. Necessary knowledge of bridge management is enhanced by RHD staff</p> <p>4.1 On the job trainings (OJTs) on bridge inspection / evaluation in model area(s) are conducted with Bridge inspection / evaluation manual</p>	<ul style="list-style-type: none"> Activity 4.1 – 4.5 are not implemented yet as of 15th January 2016. 	<ul style="list-style-type: none"> Detailed OJTs plan was agreed <table border="1" data-bbox="478 672 845 1142"> <thead> <tr> <th colspan="2">OJT</th> </tr> </thead> <tbody> <tr> <td>Participants</td> <td>75 MT (65 EE+10HQ Staff)</td> </tr> <tr> <td>Period</td> <td>4 weeks</td> </tr> <tr> <td>Venue</td> <td>Mirpur T/C, Manikganj</td> </tr> <tr> <td>RHD issues</td> <td> <ul style="list-style-type: none"> Accommodation (25 participants)(Dhaka 3 wks, Manikganj 1 wk) Transportation for field work, necessary vehicles:6 (min 4 passengers) Daily allowance Lunch </td> </tr> </tbody> </table> <table border="1" data-bbox="853 672 1220 1142"> <thead> <tr> <th colspan="2">Joint Training Course by MT (JTC)</th> </tr> </thead> <tbody> <tr> <td>Participants</td> <td>SDE, SAE, (WS) from all SDs in each EE area, 18 from each SDO: min 3, DO:1AE, CO:1AE, ZO:1AE</td> </tr> <tr> <td>Period</td> <td>As soon as possible after OJT (within 2 weeks) 4 days for each half Zone *First Zone Block: Saturday to Tuesday *Second Zone Block: Tuesday to Friday *1 day is for field work</td> </tr> <tr> <td>Venue</td> <td>Each Zone Office</td> </tr> <tr> <td>RHD issue</td> <td> <ul style="list-style-type: none"> Accommodation for field work, Daily allowance Lunch </td> </tr> </tbody> </table>	OJT		Participants	75 MT (65 EE+10HQ Staff)	Period	4 weeks	Venue	Mirpur T/C, Manikganj	RHD issues	<ul style="list-style-type: none"> Accommodation (25 participants)(Dhaka 3 wks, Manikganj 1 wk) Transportation for field work, necessary vehicles:6 (min 4 passengers) Daily allowance Lunch 	Joint Training Course by MT (JTC)		Participants	SDE, SAE, (WS) from all SDs in each EE area, 18 from each SDO: min 3, DO:1AE, CO:1AE, ZO:1AE	Period	As soon as possible after OJT (within 2 weeks) 4 days for each half Zone *First Zone Block: Saturday to Tuesday *Second Zone Block: Tuesday to Friday *1 day is for field work	Venue	Each Zone Office	RHD issue	<ul style="list-style-type: none"> Accommodation for field work, Daily allowance Lunch 	<ul style="list-style-type: none"> The period of OJT has been changed from 4 weeks to 2 weeks. OJTs schedule (Inspection and Evaluation Training, BMS Training and Rehabilitation & Strengthening Training) was under discussion among the Project. There are three options of the schedule available, and there is a high possibility of Option 2. <table border="1" data-bbox="837 212 1045 627"> <thead> <tr> <th></th> <th>Starting from</th> <th>End at</th> </tr> </thead> <tbody> <tr> <td>Option 1</td> <td>2nd Apr, 2017</td> <td>8th Jun, 2017</td> </tr> <tr> <td>Option 2</td> <td>2nd Apr, 2017</td> <td>15th May, 2017</td> </tr> <tr> <td>Option 3</td> <td>2nd Apr, 2017</td> <td>27th Jun, 2017</td> </tr> </tbody> </table> <ul style="list-style-type: none"> Details of the JTC is under discussion. 		Starting from	End at	Option 1	2 nd Apr, 2017	8 th Jun, 2017	Option 2	2 nd Apr, 2017	15 th May, 2017	Option 3	2 nd Apr, 2017	27 th Jun, 2017
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NO	Activity	Achievement level as of 15 th January, 2016	Achievement level as of 15 th July, 2016 VERSION 3	Achievement level as of 15 th February, 2017 VERSION 4
4.2	OJTs on prioritizing bridges to be repaired in model area(s) are conducted by utilization of BMS		<ul style="list-style-type: none"> No activities are planned in this term. Detailed schedule of OJT is not finalized due to unacceptable Terrorism happened on 1st of July in Dhaka. The GOJ has been studying security situation and assurance plan of safety of JICA Experts in Bangladesh, the Consultant Team has been waiting instruction made by GOJ. The Consultant Team shall follow the instruction issued by GOJ. 	<ul style="list-style-type: none"> During and after the OJT, all bridges in Manikganj Division will be inspected and data of the bridges will be inserted into the BMS. Prioritizing will be done by utilization of BMS after all the bridge data of Manikganj division are inserted into BMS.
4.3	OJTs on selection of bridge rehabilitation / strengthening measures, cost estimation in model area(s) are conducted with Bridge rehabilitation / strengthening manual		<ul style="list-style-type: none"> No activities are planned in this term. The timing of prioritization of bridges for repair in the model area (Manikganj Division) by BMS is not clear due to above reason. 	<ul style="list-style-type: none"> When all data of bridges in Manikganj Division are available, further progress can be made.
4.4	Advices on supervision of bridge rehabilitation / strengthening works are given by Expert		<ul style="list-style-type: none"> No activities are planned in this term. The condition for Advices on supervision of bridge rehabilitation / strengthening works by Expert is that contracts of bridge rehabilitation / strengthening works shall be made by RHD, after that JICA Expert can give advices on supervision activities by RHD staffs. When the Consultants Team gets information of contract on bridge repair works, perhaps the Bridge Rehabilitation Expert will 	<ul style="list-style-type: none"> There is no progress confirmed from Version 3.

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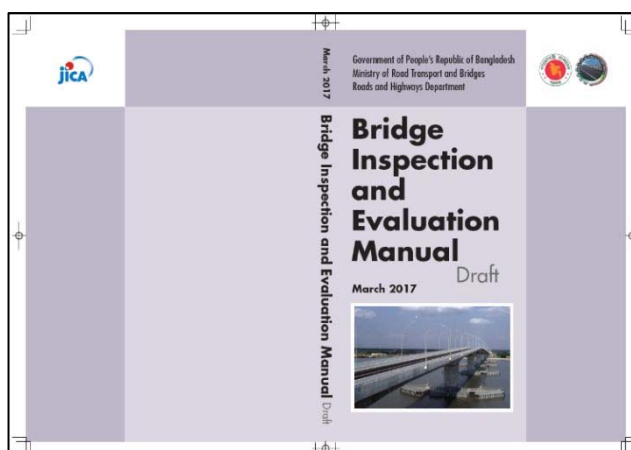
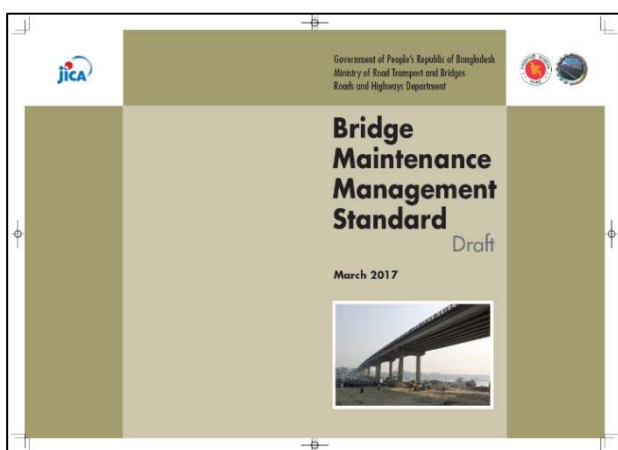
NO	Activity	Achievement level as of 15 th January, 2016	Achievement level as of 15 th July, 2016 VERSION 3	Achievement level as of 15 th February, 2017 VERSION 4
4.5	Institutional development plan is prepared		<p>make recommendation on supervision works for bridge repair works after site investigation.</p> <ul style="list-style-type: none"> ● It is under preparation by the JICA consultant in cooperation with C/P. 	<ul style="list-style-type: none"> ● Institutional development plan is comprised of 2 stages. The 1st stage is preparing the Documents of bridge maintenance procedure and standard of staff deployment which was prepared through the activity of Output-1. The preparation for 2nd stage will start after the OJT.

2) Progress of the manual preparation

NO	Name of manual	Progress
1	Bridge Maintenance Management Standard	Drafts of 1 Standard and 3 Manuals are completed by the Project. Once these drafts are approved by JCC, they will be utilized for the OJT. Feedback and comments for the standard and manuals confirmed during the OJT will be reflected on the final standard and manuals.
2	Bridge Inspection & Evaluation Manual	
3	Bridge Rehabilitation & Strengthening Manual	
4	Bridge Management System Manual	

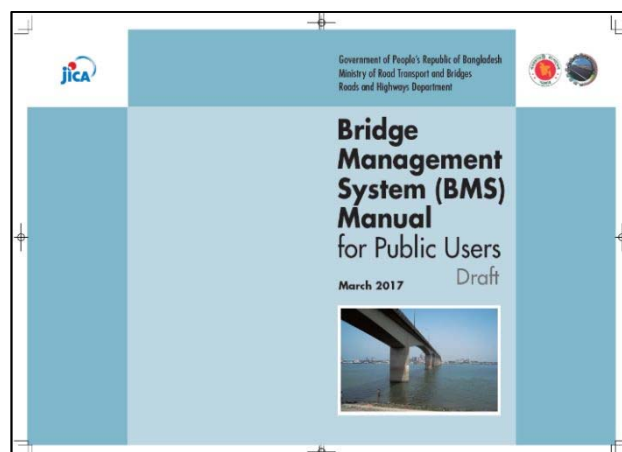
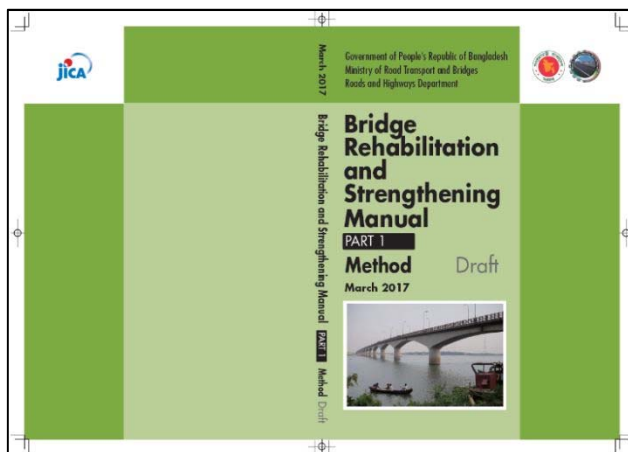
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<NO2: Bridge Inspection & Evaluation Manual>



<NO3: Bridge Rehabilitation & Strengthening Manual>

<NO4: Bridge Management System Manual >



3) Training in Japan

The 1st training in Japan was conducted from 16th to 29th April 2016. 8 participants who played center roles in the Project participated in the training. Participants are shown in the list below.

NO	Name	Title
1	Parimal Bikash Sutradhar	Project Director
2	A.K.M. Manir Hossain Pathan	Additional Project Director
3	Md. Shafikul Islam	Project Manager
4	Md. Sohel Rana	Deputy Project Manager
5	Mohammed Shamim Al Mamun	Executive Engineer
6	Mohammad Saifuddin	Executive Engineer
7	Najmul Hasan	Executive Engineer
8	Md. Khaled Shaheed	Executive Engineer

The training schedule is as below.

Date	Time	Contents	Place
16 th Apr		Departure from Dhaka	
17 th Apr		Arrival at Tokyo	
18 th Apr	10:00-12:00	JICA Briefing	JICA International Center (TIC) Tokyo
	13:00-14:00	Presentation on Issues	JICA TIC
	14:00-17:00	Lecture[1.Project Cycle Management]	JICA TIC
19 th Apr	10:00-12:00	Lecture[2.Project Cycle Management]	JICA TIC
	13:30-15:30	Lecture[Bridge Maintenance Policy in Japan]	JICA TIC
20 th Apr	10:00-12:00	Lecture[Utilization of Training Centre]	NEXCO Engineering Takasaki TTC
	13:30-16:30	Site visit	
21 st Apr	10:00-12:00	State of the Art on Bridge Maintenance	Public Works Research Institute under Ministry of Land, Infrastructure, Transport and Tourism
	13:30-15:30	Site visit	
22 nd Apr	10:00-12:00	Visit to Bearing Fabricator	BBM Funabashi Factory
	13:30-15:30	Testing Equipment on Steel Members	Yokogawa Bridge, R&L
23 rd Apr	All day	Free time	-
24 th Apr	8:00-10:30	Haneda Airport – Nagasaki Airport	-
	12:00-17:00	Nagasaki Bus Tour	-
25 th Apr	10:00-12:00	lecture[Road Protector System & 3D Measurement]	Nagasaki University
	13:30-15:30	Site visit (NSD Equipment)	
	16:00-18:00	Visit to major bridges in Nagasaki	-
26 th Apr	9:00-13:00	Visit to Repair Works Site	Nagasaki Prefecture
	13:00-18:30	Nagasaki Airport – Haneda Airport	-
27 th Apr	10:00-11:30	Bridge Maintenance Management in Yokohama City	Yokohama City
	13:00-14:00	Visit to Bridge Inspection Site or Repair Works Site	
	16:00-18:00	Lecture[Guidance for Action Plan]	JICA TIC
28 th Apr	9:00-12:00	Making of Action Plan	JICA TIC
	13:00-14:30	Presentation of Action Plan	JICA TIC
	14:30-15:30	Comments & Presentation of Certificate	JICA TIC
29 th Apr		Departure from Tokyo	

2) One of the activities for the generation of the project outputs, workshops (WSs) were conducted. Details of WSs are the following.

No	Name of WS	Date	Participants *1
1	WS1(A1-WS1): Towards the Establishment of Bridge Maintenance Cycle (BMC)	11 th Nov 2015 10:00 -12:50	15
2	WS2 (A2-WS1): Development of Bridge Inspection Manual	13 th Dec 2015, 10:30 -12:00	18
3	WS3 (A2-WS2): Development of Bridge Evaluation Manual	13 th Dec 2015, 12:30 -14:00	18
4	WS4 (A1-WS2): Solution of Issues on Maintenance Work Implementation, Estimate of Annual Work Volume, Necessity & Securing Human Resources	10 th Jan 2016, 10:00 -11:30	14
5	WS5 (A2-WS3): Case Study of Detailed Investigation of Load Capacity	10 th Jan 2016, 11:45 -13:15	14

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6	WS6 (A1-WS3): Consideration Regarding Pending Items"	17 th Jan 2016 10:15 -13:15	18
7	WS7 (A1-WS4): Flow of Bridge Maintenance Activities	17 th Jan 2016 13:45 -15:10	17
8	WS8 (A3-WS1): Program Construction of Bridge Management System (BMS)	4 th Feb 2016 10:10 -12:00	16
9	WS9 (A1-WS5): 1) Bridge Maintenance Management Standard (Pre-Draft) 2) Capacity Development Training Plan 3) Review of Existing Bridge Condition Survey Manual	4 th Feb 2016 12:10 – 15:25	16
10	WS10 (A2-WS4): Inspection Procedure, Safety during Inspection & Recording, Contents/Edition Policy of Bridge Inspection Manual	13 th Mar 2016 10:15 – 11:35	16
11	WS11 (A2-WS5): 1) Method of Evaluation of Bridge Element Types & Evaluation Criteria 2) Method of Evaluation of Entire Bridge 3) Judgment of Need for Detailed Investigation	13 th Mar 2016 11:45 – 13:15	16
12	WS12 (A3-WS2): Confirmation of Requirements of BMS(Items of INPUT/OUTPUT)	27 th Mar 2016 10:10 – 12:00	19
13	WS13 (A1-WS6): Bridge Maintenance Management Standard (Draft ver.1)	27 th Mar 2016 12:30 – 13:45	17
14	WS14 (A2-WS6): Bridge Inspection/Evaluation Manual [Inspection] (Draft), Final Draft of Manual Requirement of Addition/Removal/Modification of Contents	10 th Apr 2016 10:05 – 11:55	18
15	WS15 (A2-WS7): Bridge Inspection/Evaluation Manual [Evaluation] A) Bridge and Culvert Types B) Naming of Evaluation Category (Evaluation of Bridge Element Types) C) Unification of Naming (Evaluation of Entire Bridge) D) Impact Level (Evaluation of Entire Bridge)	10 th Apr 2016 12:10 – 13:20	18
16	WS16 (A1-WS7): Bridge Maintenance Management Standard, Enhancement of Technical Ability A) Significance of Enhancement of Technical Ability B) Methodology of Enhancement of Technical Ability C) Internal Activities D) Other Activities	10 th Apr 2016 13:50 – 14:25	16
17	WS17 (A1-WS8): Bridge Maintenance Management Standard (Draft ver.2), Recommendations for Creating Durable Bridges A) 5.1 Planning of Durable Bridges B) 5.2 Design of Durable Bridges	10 th Apr 2016 14:30 – 15:45	16
18	WS18 (A2-WS8) : Development of Bridge Rehabilitation/Strengthening Manual 1) Overview of Repair Works, Principles & Methods 2) Examples of Rehabilitation/ Strengthening Methods 3) Application and Quality Control 4) Routine Maintenance Works	22 nd May 2016 10:00 – 11:40	13
19	WS19 (A3-WS9) : 1) Development of Bridge Rehabilitation/Strengthening Manual; Part 2 : Cost Estimation 2) Development of Bridge Inspection Manual: Essential Viewpoints during Inspection of Bridges.	22 nd May 2016 12:10 – 13:35	13
20	WS20 (A3-WS3): Procedure and Function of Bridge Management System (BMS)	29 th May 2016 10:10 – 13:02	16
21	WS21 (A2-WS10): Development of Bridge Rehabilitation/Strengthening Manual [Method]	19 th Jun 2016 12:10 – 13:55	18

22	WS22 (A2-WS11): Development of Bridge Rehabilitation/Strengthening Manual; Part 2 : Cost Estimation	19 th Jun 2016 13:56 – 14:55	18
23	WS23 (A3-WS4): Introduce of Bridge Management System	29 th Jan 2016 10:30 – 13:05	23

*1: Project members are included.

1-3 Achievement of Output

Indicators of Outputs		Achievement level
1.1	Documents of Bridge maintenance procedure and staff deployment are approved by RHD	<ul style="list-style-type: none"> ● “XX” in indicators (Output 1.1, 2.1, 2.2, 3.2, 4.1, 4.2, and 4.3) were replaced with RHD and 75. ● Achievement of Outputs will be measured during the 4th JCC.
1.2	Bridge inspection based on the bridge maintenance cycle is commenced by RHD	
1.3	Data management by utilization of BMS is commenced by RHD	
1.4	Bridge maintenance plan (annual budget and work plans) in model area(s) is prepared	
2.1	Bridge inspection / evaluation manual is approved by RHD	
2.2	Bridge rehabilitation / strengthening manual is approved by RHD	
3.1	Data accessibility of BMS is improved	
3.2	BMS manual is approved by RHD	
4.1	75 bridge inspection MT are trained	
4.2	75 bridge rehabilitation MT are trained	
4.3	75 BMS administrators are trained	
4.4	The human resource development plan is approved	

1-4 Achievement of the Project Purpose

Indicators of Outputs		Achievement level
1	Bridge maintenance cycle is commenced by RHD	As of 15 th February 2017 the achievement level of each indicator of outputs are not ready to be measured.
2	Necessary training based on the institutional capacity development plan is conducted by Master Trainers (MT).	

1-5 Changes of Risks and Actions for Mitigation

<Version 3 >

- As JICA experts have not been allowed to travel to Bangladesh since July due to the security reason so pre-conditions are not fully fulfilled.

1-6 Progress of Actions undertaken by JICA

<Version 3 >

- JICA Bangladesh played a center role in organizing the 1st and 2nd JCC, such as communicating with Secretary to attend it as chairperson.
- JICA informed the security information through e-mail and SMS promptly to consultants for ensuring consultants' safety. Furthermore, safety briefing for consultants is conducted on a regular basis.

1-7 Progress of Actions undertaken by Gov. of Bangladesh

<Version 3 >

- Secretary of Road Transport and Highways Division from the Ministry of Road Transport and Bridges attended the 1st and 2nd JCC as chairperson.

<Version 4 >

- TPP is approved by the Gov. of Bangladesh.

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

- No activities for the progress of Environmental and Social Considerations are undertaken.

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

<Version 3 >

- Female engineer had been assigned to the Project since the commencement of the Project.

<Version 4 >

- New female Project Director & Additional Chief Engineer, RHD has been assigned since January 2017. Although more female engineers who involve in the Project need to be increased, it is difficult to make it because the number of female engineers is lower than those of males relatively.

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.)

<Version 3 >

- Current remarkable concern is that the TPP has not been approved by Bangladesh side yet. Given that the TPP is not approved, travelling allowance such as transportation costs, daily allowance and accommodation costs for OJT participants cannot be secured. As no TPP is approved, no funds are available, thus, the immediate approval process of the TPP should be executed and completed as soon as possible.
- According to RHD, RHD has already sent the revised TPP to the Ministry. Its secretary will sign the TPP and send it to Planning Commission (Ministry of planning). The Planning Commission will approve the TPP as a final step. There is no certainty about the required time in this process. It might take even one or two months.

<Version 4 >

- As mentioned in 1-7, TPP is approved by the Gov. of Bangladesh.

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

<Version 3 >

- Based on the PDM, the project activities have been delayed due to the security reason. Plan how to catch up activities (for instance a change of the time schedule) delayed will be one of agendas for 3rd JCC.

<Version 4 >

- The 3rd JCC (in July, 2016) was not held therefore the issue related to the delay of the work schedule will be an agenda of the 3rd JCC meeting (in March, 2017).

3. Modification of the Project Implementation Plan

3-1 PO

<Version 3 >

- Information (the achievement of inputs and activities, etc.) of PO is updated each version.

< Version 4 >

- During the 3rd JCC to be held in March 2017, the PO version 4 will be approved.

3-2 Other modifications on detailed implementation plan

- None.

4. Preparation of Gov. of Bangladesh toward after completion of the Project

- According to the approved TAPP, to make the system sustainable after the completion of the project (i) Senior System Analyst – 01 no. (ii) System Analyst – 01 no. (iii) Computer Programmer – 01 no. (iv) Computer Operator – 01 no. (v) Machinist/Operator – 10 nos. will be recruited in revenue setup of BMMS Division under Bridge Management Wing and the system will be operated from GOB fund.

<II. Project Monitoring Sheet I & II>

- Project Monitoring Sheet I (PDM, Version 3 & 4) & II (PO, Version 3 & 4) will be shared with C/Ps during the 3rd JCC.

TO CR of JICA Bangladesh OFFICE**Project Title: BRIDGE MANAGEMENT CAPACITY DEVELOPMENT PROJECT****Version of the Sheet: Ver.5 (Term: 10th July, 2015 – 2nd November, 2018)****Name: Yoshimitsu HIYAMA****Title: Team Leader****Submission Date: 3rd December 2017****< I. Summary (all achievements are as of 15th November, 2017)>****1. Progress****1-1 Progress of Inputs****1-1-1 Japanese side****<JICA experts dispatched to Bangladesh>**

Since July 2016, JICA experts have not been allowed to get in Bangladesh due to the security reasons. However, JICA experts have been re-dispatched to Bangladesh since January 2017, although there are some restrictions on the length of stay in Bangladesh. Given these circumstances, JICA experts have not been dispatched as planned since July 2016. The actual achievement of dispatched JICA experts is as follows.

NO	Name	Title	Dispatched Period to Bangladesh
1	Yoshimitsu HIYAMA	Team Leader/Bridge Maintenance Plan	(1 st) 8 th Aug -12 th Sep, 2015 (2 nd) 17 th Oct - 14 th Nov, 2015 (3 rd) 17 th Dec, 2015 - 13 th Feb, 2016 (4 th) 11 th Mar - 15 th Apr, 2016 (5 th) 23 rd Jan - 1 st Feb, 2017 (6 th) 17 th Feb - 8 th Mar, 2017 (7 th) 5 th May - 14 th May, 2017 (8 th) 8 th Jul - 23 rd Jul, 2017 (9 th) 28 th Jul – 2 nd Aug, 2017 (10 th) 22 nd Sep - 6 th Oct, 2017
2	Ikuo HARAZAKI	Bridge Inspection	(1 st) 17 th Aug - 1 st Sep, 2015 (2 nd) 4 th Dec, 2015 - 6 th Feb, 2016 (3 rd) 4 th Mar - 16 th Apr, 2016
3	Toshiyuki KONISHI	Bridge Evaluation	(1 st) 20 th Aug - 2 nd Sep, 2015 (2 nd) 3 rd Dec - 19 th Dec, 2015 (3 rd) 14 th Jan - 30 th Jan, 2016 (4 th) 3 rd Mar - 18 th Mar, 2016 (5 th) 1 st Apr - 16 th Apr, 2016 (6 th) 20 th Feb - 1 st Mar, 2017 (7 th) 10 th May - 18 th May, 2017 (8 th) 7 th Jul - 23 rd Jul, 2017
4	Rikiya IIZUKA	Bridge Maintenance Plan (2)	(1 st) 9 th Aug - 4 th Sep, 2015 (2 nd) 8 th Jan - 18 th Mar, 2016 (3 rd) 20 th May - 9 th Jun, 2016
5	Kenichi HIDA	Detailed Survey	(1 st) 16 th Aug - 2 nd Sep, 2015 (2 nd) 31 st Dec, 2015 - 19 th Jan, 2016 (3 rd) 3 rd Mar - 19 th Mar, 2016 (4 th) 27 th Feb - 8 th Mar, 2017 (5 th) 5 th May - 12 th May, 2017 (6 th) 8 th Jul - 23 rd Jul, 2017
6	Yasuo KOSAKA	Bridge Rehabilitation Strengthening/Bridge Evaluation (2)	(1 st) 16 th Aug - 1 st Sep, 2015 (2 nd) 5 th Nov - 30 th Dec, 2015 (3 rd) 2 nd Mar - 16 th Apr, 2016 (4 th) 7 th May - 2 nd Jul, 2016 (5 th) 28 th Jul - 13 th Aug, 2017

7	Yukitomo TATSUMI	Cost Estimate	(1 st) 3 rd Dec - 19 th Dec, 2015 (2 nd) 15 th Mar - 13 th Apr, 2016 (3 rd) 9 th May - 2 nd Jul, 2016 (4 th) 1 st Aug - 13 th Aug, 2017
8	Kengo MAKISHIMA	Bridge Management System	(1 st) 20 th Aug - 12 th Sep, 2015 (2 nd) 3 rd Dec - 19 th Dec, 2015 (3 rd) 14 th Jan - 13 th Feb, 2016 (4 th) 17 th Mar - 2 nd Apr, 2016 (5 th) 19 th May - 4 th Jun, 2016 (6 th) 23 rd Jan - 1 st Feb, 2017 (7 th) 24 th Feb - 8 th Mar, 2017 (8 th) 12 th May - 18 th May, 2017 (9 th) 2 nd Jul - 10 th Jul, 2017 (10 th) 21 st Jul - 2 nd Aug, 2017 (11 th) 22 nd Sep - 6 th Oct, 2017
9	Kanji OHNO	Bridge Management System (2)	(1 st) 22 nd Jan - 6 th Feb, 2016 (2 nd) 19 th Mar - 3 rd Apr, 2016 (3 rd) 17 th Jun - 1 st Jul, 2016
10	Chiaki YAMADA	Project Monitoring	(1 st) 23 rd Aug - 1 st Sep, 2015 (2 nd) 19 th Jan - 30 th Jan, 2016 (3 rd) 18 th Feb - 22 nd Feb, 2017
11	Hideaki YASASHI	Coordinator/Bridge Maintenance Plan (Assistance)	(1 st) 8 th Aug - 2 nd Sep, 2015 (2 nd) 5 th Nov - 21 st Nov, 2015 (3 rd) 14 th Jan - 30 th Jan, 2016 (4 th) 3 rd Mar - 19 th Mar, 2016 (5 th) 23 rd Jan - 1 st Feb, 2017 (6 th) 17 th Feb - 27 th Feb, 2017 (7 th) 10 th May - 18 th May, 2017 (8 th) 2 nd Jul - 10 th Jul, 2017 (9 th) 21 st Jul - 28 th Jul, 2017 (10 th) 9 th Aug - 18 th Aug, 2017 (11 th) 25 th Sep - 6 th Oct, 2017

(Remark: 1. Dispatched period shown in the above table is as of 15th July)

<Equipment and materials >

NO	Items	Qty	Unit price	Unit	Total amount
1	PC for local staff (Secretary and accountant)	2	32,700	Tk	65,400Tk
2	PC and accessories for the System Manager	1	67,800	Tk	67,800Tk
3	Robotic Camera	2	3,820,000	Yen	7,640,000Yen

(Remark: Equipment and materials which have a durable years for 2 years and are more than 50,000Yen are listed.)

<Local staff members (employed by the Project)>

NO	Name	Title of the Project	Engaged Period
1	Md. Abdullah Al Mahmud Bhuiyan	Bridge Engineer	17 th Nov 2015 - 30 th Mar 2017
2	Md. Asaduzzaman	Bridge Engineer	26 th Feb 2017 - at present
3	Abdullah Al Mamun	Bridge Engineer	23 rd Feb 2017 - at present
4	Mr. Anis Sharif	Interpreter/Coordinator	10 th Aug 2015 - at present
5	Nadia Sharmin	Assistant Manager	23 rd Feb 2017 - at present
6	Ms. Swapna	Office Cleaner	1 st Nov 2015 - at present

1-1-2 Bangladesh side

- Counterpart (C/P) personnel (from RHD) ("Core Member (CM)" in the Project).

Since the project commencement, necessary C/P and CM have been allocated, which have been contributing the better project outputs. PD, APD, PM and DPM are not only C/P but CM, but the others are only CM.

NO	Name	Title	Engaged Period
1	Rowshan Ara Khanam	Project Director & Additional Chief Engineer, Bridge management Wing	22 nd January 2017 - at present
2	Mohammad Shabbir Hasan Khan	Superintending Engineer, Planning & Data Circle	10 th January 2017 - at present
3	A.K.M. Manir Hossain Pathan, PEng.	Superintending Engineer, Procurement Circle, Former Additional Project Director	8 th August 2015 - at present
4	A.K. Shamsuddin Ahmed Nannu	Project Manager & Executive Engineer, BMMS Division	5 th October 2016 - at present
5	Md. Shafikul Islam	Executive Engineer, Sunamganj Road Division, Former Project Manager (PM)	8 th August 2015 - at present
6	Santanu Palit	Deputy Project Manager & Sub-Divisional Engineer, BMMS Sub-Division	1 st November 2016 - at present
7	ShiShir Kanti Routh	Superintending Engineer, 3 rd Shitalakhya Bridge Project	2 nd June 2016 - at present
8	Md. Shafiul Azam	Executive Engineer, Data Base Division	8 th August 2015 - at present
9	Mohammed Shamim Al Mamun	Executive Engineer, Habiganj Road Division	8 th August 2015 - at present
10	Mohammed Saifuddin	Executive Engineer, Western Bangladesh Bridge Improvement Project, Former Comilla Road Division	8 th August 2015 - at present
11	Nazmul Hasan	Executive Engineer, Rajshahi Road Division, Rajshahi Road Division	8 th August 2015 - at present
12	Md. Khaled Shaheed	Executive Engineer, Former Barisal Road Division	8 th August 2015 - at present
13	Mohammad Moniruzzaman	Executive Engineer, Road Design & Standard Division	2 nd June 2016 - at present
14	Abdur Rahman Kaoser	Executive Engineer, Bridge Design Division - 3	2 nd June 2016 - at present
15	Md. Mohibul Haque	Executive Engineer, Manikganj Road Division	20 th April 2017- at present
Former core members are following.			
/	Parimal Bikash Sutradhar	Additional Chief Engineer, Project Director	8 th August 2015 - 20 th January 2017
/	Md. Sohel Rana	SDE, Deputy Project Manager	8 th August 2015 - 1 st June 2016
/	Parveen Sultana	Executive Engineer, RHD Training Centre	8 th August 2015 - 7 th January 2016

● **Equipment and materials for the project office**

NO	Items	Quantity	Unit
1	Office space (inside the training center)	2	Room (s)
2	Office furniture (Refrigerator and water filter included)	2	Set (s)

● **Main Inspection Equipment/tools and traffic control facility/tool for OJT**

NO	Items	Quantity	Unit
1	Measuring Tape (2m)	6	Unit
2	Measuring Tape (30m)	6	Unit
3	Black/White Board & Marker	6	Set
4	Step ladder	6	Set
5	Chalk	30	Set
6	Binder (A4 Size)	75	Number
7	Rubber cone	12	Set

1-2 Progress of Activities

1)-1 The table below includes the achievement of activities as of 15th January, 2016 (Version 2), 15th July, 2016 (Version 3), 15th February, 2017 (Version 4) and 15th November (Version 5).

NO	Activity	Achievement level as of 15 th January, 2016 Version 2	Achievement level as of 15 th July, 2016 Version 3	Achievement level as of 15 th February, 2017 Version 4	Achievement level as of 15 th November, 2017 Version 5
1. Bridge maintenance framework is developed					
1.1	Actual condition of bridge maintenance is reviewed	<ul style="list-style-type: none"> Hearing on the actual condition of bridge maintenance with RHD headquarter staff, Manikganj Division staff and Sirajganj Division staff was carried out. The condition of bridges in Manikganj Division and Sirajganj Division was inspected on 20th August and from 23rd August until 24th August respectively. Answers of the questionnaire (draft version) were submitted at the end of October, 2015 and actual condition of maintenance was reviewed and analyzed based on them (Baseline Survey). 	<ul style="list-style-type: none"> The results of review on the actual condition of bridge maintenance of RHD were arranged in Chapter 2 “ Current Situations of the Bridges and Culverts under RHD Jurisdiction” of “Bridge Maintenance Management Standard (Draft)” were explained at WS1 and WS9 (A1-WS5)-1 as the supplement of WS1. 	<ul style="list-style-type: none"> Activities in Output 1 are completed. 	
1.2	Problems / issues on bridge maintenance cycle are identified	<ul style="list-style-type: none"> Problems/issues on bridge maintenance cycle were identified and explained at WS1 (A1-WS1) held on 11th November, 2015. 	<ul style="list-style-type: none"> Based on bridge condition data of existing BMMS, the work volume of bridge maintenance was estimated and the basic policy of bridge maintenance was explained at WS13 (A1-WS6) held on 27th March, 2016. 		-----
1.3	Institutional framework of bridge maintenance is reviewed	<ul style="list-style-type: none"> Institutional framework of bridge maintenance was reviewed, and the result of review was explained at WS4 (A1-WS2) held on 10th January, 2016. 	<ul style="list-style-type: none"> Recommendations on manpower and organization and recommendations on bridge maintenance fund were explained at WS13 (A1-WS6) held on 27th March, 2016. Furthermore the methodologies to enhance technical abilities were explained at WS16 (A1-WS7) 		

NO	Activity	Achievement level as of 15 th January, 2016 Version 2	Achievement level as of 15 th July, 2016 Version 3	Achievement level as of 15 th February, 2017 Version 4	Achievement level as of 15 th November, 2017 Version 5
1.4	Documents of bridge maintenance procedure and standard of staff deployment are prepared	<ul style="list-style-type: none"> Documents of bridge maintenance procedure and standard of staff deployment on bridge inspection were prepared. 	<ul style="list-style-type: none"> Bridge maintenance procedure and staff deployment (Later, referred to as "Bridge Maintenance Management Standard") were explained at WS9 (A1-WS5)-2 held on 2nd February, 2016. 		
2. Bridge inspection / evaluation manual and Bridge rehabilitation / strengthening manual are developed					
2.1	Existing bridge maintenance manual is reviewed and issues/problems on the manual are analyzed	<ul style="list-style-type: none"> Existing bridge maintenance manuals were collected. Based on the answers of the questionnaire (draft version), existing manuals were analyzed. 	<ul style="list-style-type: none"> In consideration of the results of the analysis, "Bridge Inspection and Evaluation Manual" was introduced. 	<ul style="list-style-type: none"> Activities in Output 2.1 are completed. 	-----
2.2	Bridge inspection / evaluation manual is updated (The achievement of Activity 2.2 is written in Activity 2.2.1 and Activity 2.2.2.)	<ul style="list-style-type: none"> Results of the baseline survey submitted by RHD at the end of October was examined. WS2 (A2-WS1) named "Development of Bridge Inspection Manual" was conducted on 13th Dec. During WS, as the first step to modify the existing manual, the condition of bridge inspection in Japan was introduced. Furthermore, "Bridge Condition Survey Manual 2014" was reviewed, and contents of the manual need to be revised were discussed. Reviewing work for "Bridge Condition Survey Manual 2014" will be continued until the next WS in February. 	<ul style="list-style-type: none"> During WS6 (A1-WS3) "Consideration Regarding Pending Items" held on 17th January, the part of "Types of Defects and Rating" in the manual was discussed. WS9 (A1-WS5)-3 named "Review of existing Bridge Condition Survey Manual - 2014" was conducted on 4th February. During WS, "Bridge Condition Survey Manual 2014" was reviewed, and also Draft Contents of new Bridge Inspection Manual - 2016 were discussed. During WS 10 (A2-WS4) named "Bridge Inspection Program and Procedure of Inspection" held on 13th 	<ul style="list-style-type: none"> Draft of Bridge Inspection /Evaluation Manual was completed. 	<ul style="list-style-type: none"> Draft of Bridge Inspection/ Evaluation Manual (Inspection) was approved during the 3rd JCC. <p><Next Step></p> <ul style="list-style-type: none"> The draft will be utilized during the Bridge Inspection in Manikganji Division from the end of November 2017. The final draft of the Manual will be completed after the Manual is modified based on feedback from OJT (1) – (2) and the Inspection in Manikganji Division. The final draft will be approved during the 5th JCC.
2.2.1	Bridge inspection / evaluation manual (Inspection) is updated	<ul style="list-style-type: none"> Results of the baseline survey submitted by RHD at the end of October was examined. WS2 (A2-WS1) named "Development of Bridge Inspection Manual" was conducted on 13th Dec. During WS, as the first step to modify the existing manual, the condition of bridge inspection in Japan was introduced. Furthermore, "Bridge Condition Survey Manual 2014" was reviewed, and contents of the manual need to be revised were discussed. Reviewing work for "Bridge Condition Survey Manual 2014" will be continued until the next WS in February. 	<ul style="list-style-type: none"> During WS6 (A1-WS3) "Consideration Regarding Pending Items" held on 17th January, the part of "Types of Defects and Rating" in the manual was discussed. WS9 (A1-WS5)-3 named "Review of existing Bridge Condition Survey Manual - 2014" was conducted on 4th February. During WS, "Bridge Condition Survey Manual 2014" was reviewed, and also Draft Contents of new Bridge Inspection Manual - 2016 were discussed. During WS 10 (A2-WS4) named "Bridge Inspection Program and Procedure of Inspection" held on 13th 	<ul style="list-style-type: none"> Draft of Bridge Inspection /Evaluation Manual was completed. 	<ul style="list-style-type: none"> Draft of Bridge Inspection/ Evaluation Manual (Inspection) was approved during the 3rd JCC. <p><Next Step></p> <ul style="list-style-type: none"> The draft will be utilized during the Bridge Inspection in Manikganji Division from the end of November 2017. The final draft of the Manual will be completed after the Manual is modified based on feedback from OJT (1) – (2) and the Inspection in Manikganji Division. The final draft will be approved during the 5th JCC.

NO	Activity	Achievement level as of 15 th January, 2016 Version 2	Achievement level as of 15 th July, 2016 Version 3	Achievement level as of 15 th February, 2017 Version 4	Achievement level as of 15 th November, 2017 Version 5
2.2.2	Bridge inspection / evaluation manual (Evaluation) is prepared	<ul style="list-style-type: none"> Preparation of Bridge inspection / evaluation manual (Evaluation) is in progress. Following agendas were explained during the WS3 (A2-WS2), conducted 13th December, 2015. <ol style="list-style-type: none"> Purpose of Bridge Evaluation Brief review of Bridge 	<p>March, Bridge Inspection Program, Composition of Inspection Team, Inspection Tools and Access Equipment, Procedure of Inspection, and Safety during Inspection in the manual were discussed.</p> <ul style="list-style-type: none"> During WS 14 (A2-WS6) named "Development of Bridge Inspection and Evaluation Manual" held on 10th April, seven chapters and nine appendices were introduced and 1. Background, 2.Introduction, 3.1Types of Inspection and Frequency, and 7. Recording of Inventory and Inspection Results were mostly discussed. During WS 18 (A2-WS8) named "Essential Points during Inspection of Bridges" held on 22nd May, which is the summary of guidelines for the Inspector for Periodic Inspection, was explained and discussed. Draft of Bridge Inspection and Evaluation Manual was almost completed. 	<ul style="list-style-type: none"> Draft of Bridge Inspection and Evaluation Manual was completed. 	<ul style="list-style-type: none"> Draft of Bridge inspection /evaluation manual (Evaluation) was approved during the 3rd JCC. <p><Next Step></p> <ul style="list-style-type: none"> The draft will be utilized during the Bridge

NO	Activity	Achievement level as of 15 th January, 2016 Version 2	Achievement level as of 15 th July, 2016 Version 3	Achievement level as of 15 th February, 2017 Version 4	Achievement level as of 15 th November, 2017 Version 5
		<p>Evaluation Method in practice by RHD</p> <ul style="list-style-type: none"> c. Cases of emergency damage investigation of Bridges d. Detailed investigation of Bridges ● The Case of Detailed Investigation of Load Capacity was explained during WS5, conducted on 10th January, 2016. ● Draft of the evaluation Manual will be prepared in May 2016. 	<p>and discussed.</p> <ul style="list-style-type: none"> ● During WS 15 (A2-WS7) named "Development of Bridge Inspection and Evaluation Manual" held on 10th April, one chapter and three appendices were introduced and 1. Bridge and Culvert types, 2. Naming of Evaluation Category, 3. Unification of the naming, and 4. Impact level were explained and discussed. ● Draft of Bridge Inspection and Evaluation Manual was almost completed. 		<p>Inspection in Manikganji Division from the end of November 2017.</p> <ul style="list-style-type: none"> ● The final draft of the Manual will be completed after the Manual is modified based on feedback from OJT (1) – (2) and the inspection in Manikganji Division. ● The final draft will be approved during the 5th JCC.
2.3	Bridge rehabilitation / strengthening manual is prepared (The achievement of Activity 2.3 is written in Activity 2.3.1 and Activity 2.3.2.)				
2.3.1	Bridge rehabilitation / strengthening manual (Rehabilitation/strengthening measures) is prepared	<ul style="list-style-type: none"> ● The implementation of the activity will be commenced in March, 2016. 	<ul style="list-style-type: none"> ● During WS 18 (A2-WS8) named "Rehabilitation and Strengthening" held on 22nd May, Part 1 Rehabilitation and Strengthening and Part 1-2 Routine Maintenance Works were explained and discussed. ● During WS 21 (A2-WS10) named "Development of Bridge Rehabilitation/Strengthening Manual" held on 19th June, one chapter and two appendices were introduced and a) Overview, b) Routine Maintenance Works, c) Minor Repair Works, d) Selection flow of Repair Methods and e) Major Repair Methods for different Defects were explained and discussed. ● Draft of 	<ul style="list-style-type: none"> ● Draft of Rehabilitation/Strengthening Manual (Rehabilitation/strengthening measures) was completed. 	<ul style="list-style-type: none"> ● Draft of rehabilitation strengthening manual (Rehabilitation/strengthening measures) was approved during the 3rd JCC. <p><Next Step></p> <ul style="list-style-type: none"> ● The draft will be utilized during the OJT (2) and modified based on feedback from OJT (2). ● The final draft will be approved during the 5th JCC.

NO	Activity	Achievement level as of 15 th January, 2016 Version 2	Achievement level as of 15 th July, 2016 Version 3	Achievement level as of 15 th February, 2017 Version 4	Achievement level as of 15 th November, 2017 Version 5
2.3.2	Bridge rehabilitation / strengthening manual (Cost Estimate) is prepared	<ul style="list-style-type: none"> The implementation of the activity will be commenced in April, 2016. 	<p>Rehabilitation/Strengthening Manual will be completed in August 2016, yet bridge repair photos of Bangladesh are not enough.</p> <ul style="list-style-type: none"> For the cost estimation manual, the WS19 was held on 22nd May and the WS 22 was held on 19th June. The draft cost estimation manual was almost completed in the WS 22. 	<ul style="list-style-type: none"> Draft of rehabilitation strengthening manual (Cost Estimate) was completed. 	<ul style="list-style-type: none"> Draft of Bridge rehabilitation strengthening manual (Cost Estimate) was approved during the 3rd JCC. <p><Next Step></p> <ul style="list-style-type: none"> The draft will be utilized during the OJT (2) and modified based on feedback from OJT (2). The final draft will be approved during the 5th JCC.
2.4	Manuals for Bridge maintenance are explained to RHD staff by Master Trainers (MT)	<ul style="list-style-type: none"> The implementation of the activity will be commenced after OJTs. 		<ul style="list-style-type: none"> This activity will be commenced after OJTs. 	<p><Next Step></p> <ul style="list-style-type: none"> This activity will be conducted during the Divisional Training Course (DTC) from February to March 2018 after OJT (2).
3. Bridge management system is developed					
3.1	Existing BMMS is reviewed and analyzed	<ul style="list-style-type: none"> Existing BMMS opened to public was reviewed. Several points to be improved were identified in BMMS's function of "search" and "display result of search". Reviewing BMMS was completed in September, 2015. JICA experts analyzed shortage of functions and usability of existing BMMS, and interviewed with BMMS division and MIS in RHD. JICA experts and RHD confirmed that it is impossible to improve current BMMS because of technical issue. 	<ul style="list-style-type: none"> This Activity had already completed in September, 2015. 	-----	-----

NO	Activity	Achievement level as of 15 th January, 2016 Version 2	Achievement level as of 15 th July, 2016 Version 3	Achievement level as of 15 th February, 2017 Version 4	Achievement level as of 15 th November, 2017 Version 5
3.2	Utilization of BMS is examined together by RHD	<p>and new BMS should be constructed as new program.</p> <ul style="list-style-type: none"> Examination of development of new BMS is in progress by RHD, with the supports of Japanese BMS experts. BMS basic design report ver.1 was submitted to BMMS division in December 2015. First workshop for BMS WS8 (A3-WS1) will be hold on 4th February 2016. 	<ul style="list-style-type: none"> WS8 (A3-WS1) was held on 4th February to discuss about "reviewing result of current BMMS", "explanation for Basic function of new BMS", "Formation and schedule of BMS construction team". Before this WS, BMS consultant (2) joined in the team. He is professional of System Management to construct computer program. WS 12 (A3-WS2) was held on 27th March. In this WS, "input form", "items", "scores", "weights", "coefficients", "outputted data", "user types and their authority were discussed". WS20 (A3-WS3) was held on 29th May to discuss about "Procedure of BMS" including who should approve the result of each step. 	<p>-----</p>	<p>-----</p>
3.3	Function of BMS is defined and developed	<ul style="list-style-type: none"> Activity 3.3 – 3.6 are not implemented yet as of 15th January 2016 and these activities will be commenced from February. 	<ul style="list-style-type: none"> Our team including System construction team in Bangladesh is progressing with construction of BMS. Construction of "Database functions" is almost completed, and "Calculation functions" step are advancing. 	<ul style="list-style-type: none"> WS23 (A3-WS4) was held on 29th January to show and discuss about function of BMS including "Database function", "Calculation function of Bridge Category" and "Calculation function of Remedy measure and cost" by live DEMO (actual operation) of new BMS. C/P gave some question and many idea to improve new BMS. Our team is 	<ul style="list-style-type: none"> BMS was developed based on opinions and requests confirmed in WS4. For the seminar in OJT (1), pre-Release version was completed. This version has all basic functions including automatic calculation. BMS was upgraded with many opinions and requests in OJT (1) and released as the release version before Manikganji

PM Form 3-1 Monitoring Sheet Summary

NO	Activity	Achievement level as of 15 th January, 2016 Version 2	Achievement level as of 15 th July, 2016 Version 3	Achievement level as of 15 th February, 2017 Version 4	Achievement level as of 15 th November, 2017 Version 5
3.4	Data in existing BMMS is entered into BMS by RHD		<ul style="list-style-type: none"> Activity 3.4 is not implemented yet as of completion of RELEASE version of BMS in September 2016. 	<ul style="list-style-type: none"> Activity 3.4 is not implemented yet as of completion of RELEASE version of BMS in May 2017. 	<ul style="list-style-type: none"> As the result of the BMMS data review, many invalid data were confirmed. It turned out that it is difficult to transfer BMMS data to a new BMS. Activity 3.4 is not implemented yet. The input operation will be carried out in Manikganj Inspection.
3.5	BMS manual for administrators and users is prepared		<ul style="list-style-type: none"> Activity 3.5 is implemented yet as of completion of DEMO version of BMS in August 2016. 	<ul style="list-style-type: none"> Activity 3.5 is implemented yet as of completion of DEMO version of BMS in February 2017. DEMO version of BMS is improved based on opinion in WS23. 	<ul style="list-style-type: none"> The first edition of BMS manual was published in the 3rd JCC. The second edition of BMS manual was published for OJT (1). In order to provide necessary information in accordance with the authority of the BMS user (e.g. public, RHD staff, etc.), 4 different versions for the BMS manual were prepared.
3.6	BMS manual is explained to RHD staff by BMS administrators		<ul style="list-style-type: none"> Activity 3.6 is implemented yet as of completion of RELEASE version of BMS in September 2016. 	<ul style="list-style-type: none"> Section of "How to Use" in manual was explained by our team in WS23. Section of "Logical Explanation" in manual is not implemented yet as of completion of DEMO 	<ul style="list-style-type: none"> Outline of all function was explained by the expert team in WS4. Outline of BMS and how to use were explained by the expert team in OJT (1).

Bridge Management System Manual:
① for Bridge Management Wing
② for System Administrators
③ for Inspector & Evaluator
④ for Public Users

NO	Activity	Achievement level as of 15 th January, 2016 Version 2	Achievement level as of 15 th July, 2016 Version 3	Achievement level as of 15 th February, 2017 Version 4	Achievement level as of 15 th November, 2017 Version 5																												
4.1	On the job trainings (OJTs) on bridge inspection / evaluation in model area(s) are conducted with Bridge inspection / evaluation manual	<p>Activity 4.1 – 4.5 are not implemented yet as of 15th January 2016.</p>	<p>Detailed OJTs plan was agreed</p> <table border="1"> <tr> <th colspan="2">OJT</th> </tr> <tr> <td>Participants</td> <td>75 MT (65 EE+10HQ Staff)</td> </tr> <tr> <td>Period</td> <td>4 weeks</td> </tr> <tr> <td>Venue</td> <td>Mirpur T/C, Manikganj</td> </tr> <tr> <td>RHD issues</td> <td> <ul style="list-style-type: none"> Accommodation (25 participants)(Dhaka 3 weeks, Manikganj 1 week) Transportation for field work, necessary vehicles: 6 (min 4 passengers) Daily allowance Lunch </td> </tr> <tr> <th colspan="2">Joint Training Course by MT (JTC)</th> </tr> <tr> <td>Participants</td> <td>SDE, SAE, (WS) from all SDs in each EE area, 18 from each SDO: min 3, DO:1AE, CO:1AE, ZO:1AE</td> </tr> <tr> <td>Period</td> <td>As soon as possible after OJTs (within 2 weeks) 4 days for each half Zone *First Zone Block: Saturday to Tuesday *Second Zone Block: Tuesday to Friday *1day is for field work</td> </tr> <tr> <td>Venue</td> <td>Each Zone Office</td> </tr> <tr> <td>RHD issue</td> <td> <ul style="list-style-type: none"> Accommodation for field work, Daily allowance Lunch </td> </tr> </table>	OJT		Participants	75 MT (65 EE+10HQ Staff)	Period	4 weeks	Venue	Mirpur T/C, Manikganj	RHD issues	<ul style="list-style-type: none"> Accommodation (25 participants)(Dhaka 3 weeks, Manikganj 1 week) Transportation for field work, necessary vehicles: 6 (min 4 passengers) Daily allowance Lunch 	Joint Training Course by MT (JTC)		Participants	SDE, SAE, (WS) from all SDs in each EE area, 18 from each SDO: min 3, DO:1AE, CO:1AE, ZO:1AE	Period	As soon as possible after OJTs (within 2 weeks) 4 days for each half Zone *First Zone Block: Saturday to Tuesday *Second Zone Block: Tuesday to Friday *1day is for field work	Venue	Each Zone Office	RHD issue	<ul style="list-style-type: none"> Accommodation for field work, Daily allowance Lunch 	<p>The period of OJTs have been changed from 4 weeks to 2 weeks.</p> <p>OJTs schedule (Inspection and Evaluation Training, BMS Training and Rehabilitation & Strengthening Training) was under discussion among the Project. There are three options of the schedule available, and there is a high possibility of Option 2.</p> <table border="1"> <tr> <th>Starting from</th> <th>End at</th> </tr> <tr> <td>Option 1 2nd Apr, 2017</td> <td>8th Jun, 2017</td> </tr> <tr> <td>Option 2 2nd Apr, 2017</td> <td>15th May, 2017</td> </tr> <tr> <td>Option 3 2nd Apr, 2017</td> <td>27th Jun, 2017</td> </tr> </table> <p>Details of the JTC are under discussion.</p>	Starting from	End at	Option 1 2 nd Apr, 2017	8 th Jun, 2017	Option 2 2 nd Apr, 2017	15 th May, 2017	Option 3 2 nd Apr, 2017	27 th Jun, 2017	<p>OJTs are composed of OJT (1), Bridge Inspection in Manikganj Division and OJT (2).</p> <p>OJT (1) covers 4 curriculums, 1) Inspection & Evaluation, 2) Bridge Maintenance Management Standard, 3) BMS and 4) Rehabilitation & Strengthening.</p> <p>It was conducted in three groups (Group A, B and C) in July and August 2017 in Training Center & site of Manikganj Division. Each group has 25 trainees. In total 75 trainees participated in the OJT (1). The summary of the OJT (1) conducted is shown in 1)-2.</p> <p><Next Step></p> <ul style="list-style-type: none"> According to the manuals, MT will do "Bridge Inspection & Evaluation and BMS Data Input Program" through the Bridge Inspection in Manikganj Division. Basically, all bridges in Manikganj Division will be inspected and Bridge data will be input into the BMS.
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4.2	OJTs on		<p>No activities are planned in</p>	<p>During and after the OJTs,</p>	<p>Activities on BMS are</p>																												

NO	Activity	Achievement level as of 15 th January, 2016 Version 2	Achievement level as of 15 th July, 2016 Version 3	Achievement level as of 15 th February, 2017 Version 4	Achievement level as of 15 th November, 2017 Version 5
	<p>prioritizing bridges to be repaired in model area(s) are conducted by utilization of BMS</p>		<p>this term.</p> <ul style="list-style-type: none"> Detailed schedule of OJTs is not finalized due to Terrorism happened on 1st of July in Dhaka. The GOJ has been studying security situation and assurance plan of safety of JICA Experts in Bangladesh, the Consultant Team has been waiting instruction made by GOJ. The Consultant Team shall follow the instruction issued by GOJ. 	<p>all bridges in Manikganj Division will be inspected and data of the bridges will be inserted into the BMS.</p> <ul style="list-style-type: none"> Prioritizing will be done by utilization of BMS after all the bridge data of Manikganj Division is inserted into BMS. 	<p>shown in 1)-2, OJT (1). <Next Step></p> <ul style="list-style-type: none"> Bridge data in Manikganj Division will be input into the BMS through the activity 4.1, bridges that need to be repaired will be prioritized by BMS.
4.3	<p>OJTs on selection of bridge rehabilitation / strengthening measures, cost estimation in model area(s) are conducted with Bridge rehabilitation / strengthening manual</p>		<ul style="list-style-type: none"> No activities are planned in this term. The timing of prioritization of bridges for repair in the model area (Manikganj Division) by BMS is not clear due to above reason. 	<ul style="list-style-type: none"> When all data of bridges in Manikganj Division are available, further progress can be made. 	<ul style="list-style-type: none"> The summary of the OJT (1) conducted is shown in 1)-2. <p><Next Step></p> <ul style="list-style-type: none"> According to the manuals, the rehabilitation/strengthening measures will be considered according to the result of Activity 4.1. The cost estimation will be conducted according to the result of above rehabilitation/strengthening measures.
4.4	<p>Advices on supervision of bridge rehabilitation / strengthening works are given by Expert</p>		<ul style="list-style-type: none"> No activities are planned in this term. The condition for Advices on supervision of bridge rehabilitation / strengthening works by Expert is that contracts of bridge rehabilitation / strengthening works shall be made by RHD, 	<ul style="list-style-type: none"> There is no progress confirmed from Version 3. 	<ul style="list-style-type: none"> The Bridge rehabilitation/strengthening work list is under preparation by RHD. <p><Next Step></p> <ul style="list-style-type: none"> Once the list is prepared, the JICA expert team will give advices and provide

NO	Activity	Achievement level as of 15 th January, 2016 Version 2	Achievement level as of 15 th July, 2016 Version 3	Achievement level as of 15 th February, 2017 Version 4	Achievement level as of 15 th November, 2017 Version 5
4.5	Institutional capacity development plan is prepared		<p>after that JICA Expert can give advices on supervision activities by RHD staffs. When the Consultants Team gets information of contract on bridge repair works, perhaps the Bridge Rehabilitation Expert will make recommendation on supervision works for bridge repair works after site investigation.</p> <ul style="list-style-type: none"> ● It is under preparation by the JICA consultant in cooperation with C/P. 	<ul style="list-style-type: none"> ● Institutional capacity development plan is comprised of 2 stages. The 1st stage is preparing the Documents of bridge maintenance procedure and standard of staff deployment which was prepared through the activity of Output-1. The preparation for 2nd stage will start after the OJTs. 	<p>suggestions to MTs about bridge works which are difficult to be rehabilitated and strengthened (in the construction list that the budgets are secured for the fiscal year, 2017).</p> <ul style="list-style-type: none"> ● No activities related Activity 4.5 are implemented. <p><Next Step></p> <ul style="list-style-type: none"> ● Institutional capacity development plan will be actually prepared from January to June 2018.

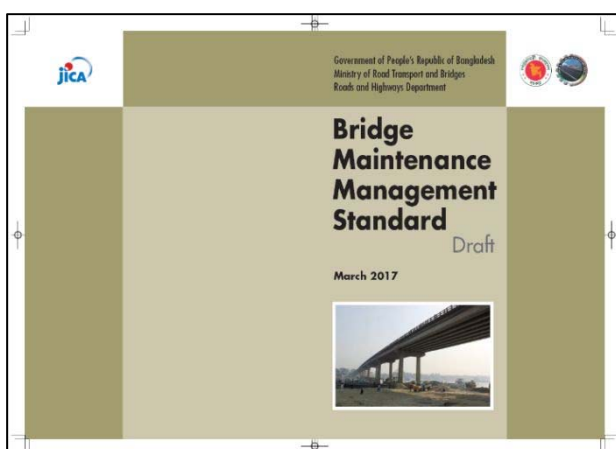
1)-2 The Summary of the OJT (1)

Curriculum	Period	Day	Time Table			Remarks
			10:00 - 12:00	12:00 -13:30	13:30 - 15:30	
Inspection & Evaluation	Group A: 11 th - 13 th July Group B: 15 th - 17 th July Group C: 18 th - 20 th July (For 3 days)	1 st Day	Explanation on Inspection	Lunch	Explanation on Evaluation	Bridge Inspection and Evaluation Manual
		2 nd Day	Exercise on Inspection & Evaluation	Lunch	Explanation of Inspection tools & Robot Camera	Exercise Material prepared by Consultant Team
		3 rd Day	Demonstration of Inspection by Robot Camera in Manikganj Division	Lunch	Bridge Inspection at the site of Sreerampur Box Culvert	
Bridge Maintenance Management Standard & BMS	Group A: 23 rd - 24 th July Group B: 26 th - 27 th July Group C: 30 th - 31 st July (For 2 days)	4 th Day	Explanation on Bridge Maintenance Management Cycle	Lunch	Explanation on BMS and BMS Utilization	Bridge Maintenance Management Standard & BMS Manual
		5 th Day	Transfer of Bridge Data of Manikganj Division from Current BMMS to New BMS	Lunch	Exercise on BMS Utilization	Exercise Material prepared by Consultant Team
Rehabilitation & Strengthening	Group A: 2 nd - 3 rd August Group B: 6 th - 7 th August Group C: 9 th - 10 th August (For 2 days)	6 th Day	Explanation on Bridge Rehabilitation & Strengthening Method	Lunch	Explanation on Bridge Rehabilitation & Strengthening Method	Explanation on Bridge Rehabilitation & Strengthening Manual by Consultant Team
		7 th Day	Explanation on Cost Estimation	Lunch	Exercise on Bridge Rehabilitation & Strengthening Method	Exercise Material prepared by Consultant Team

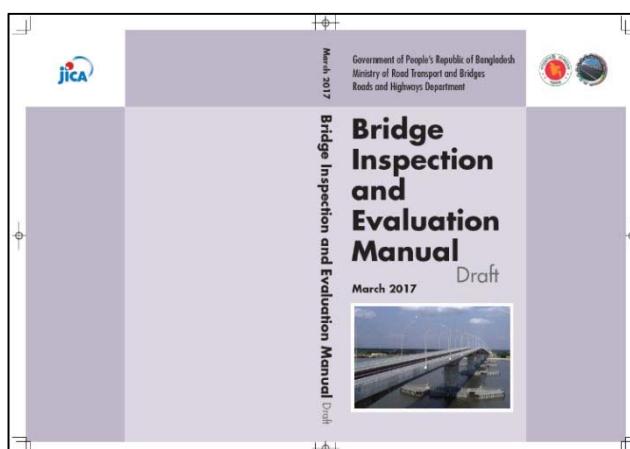
2) Progress of the manual preparation

NO	Name of manual	Progress
1	Bridge Maintenance Management Standard	<Version 4> Drafts of 1 Standard and 3 Manuals are completed by the Project. Once these drafts are approved by JCC, they will be utilized for the OJTs. Feedback and comments for the standard and manuals confirmed during the OJTs will be reflected on the final standard and manuals.
2	Bridge Inspection & Evaluation Manual	
3	Bridge Rehabilitation & Strengthening Manual ● Method ● Cost Estimate	
4	Bridge Management System Manual ● for Bridge Management Wing ● for System Administrators ● for Inspector & Evaluator ● for Public Users	<Version 5> Drafts of 1 Standard and 3 Manuals (3 areas and 7 version /volumes) were approved during the 3 rd JCC.

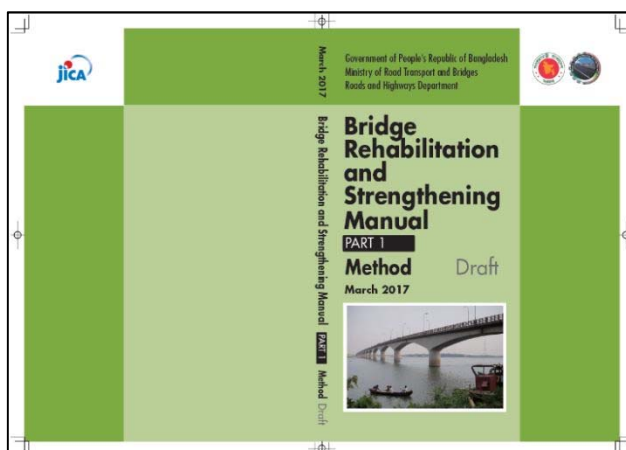
<NO1: Bridge Maintenance Management Standard>



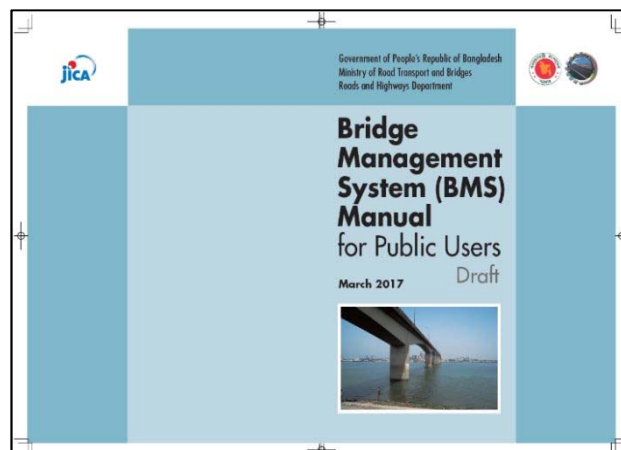
<NO2: Bridge Inspection & Evaluation Manual>



<NO3: Bridge Rehabilitation & Strengthening Manual>



<NO4: Bridge Management System Manual >



3) Training in Japan

3)-1) The 1st training

The 1st training in Japan was conducted from 16th to 29th April 2016. 8 participants who played center roles in the Project participated in the training. Participants are shown in the list below.

NO	Name	Title
1	Parimal Bikash Sutradhar	Project Director
2	A.K.M. Manir Hossain Pathan	Additional Project Director
3	Md. Shafikul Islam	Project Manager
4	Md. Sohel Rana	Deputy Project Manager
5	Mohammed Shamim Al Mamun	Executive Engineer

6	Mohammad Saifuddin	Executive Engineer
7	Najmul Hasan	Executive Engineer
8	Md. Khaled Shaheed	Executive Engineer

The training schedule is as below.

Date	Time	Contents	Place
16 th Apr	-	Departure from Dhaka	-
17 th Apr	-	Arrival at Tokyo	-
18 th Apr	10:00-12:00	JICA Briefing	JICA Tokyo International Center (TIC)
	13:00-14:00	Presentation on Issues	JICA TIC
	14:00-17:00	Lecture [1.Project Cycle Management]	JICA TIC
19 th Apr	10:00-12:00	Lecture [2.Project Cycle Management]	JICA TIC
	13:30-15:30	Lecture [Bridge Maintenance Policy in Japan]	JICA TIC
20 th Apr	10:00-12:00	Lecture[Utilization of Training Centre]	NEXCO Engineering Takasaki TTC
	13:30-16:30	Site visit	
21 st Apr	10:00-12:00	State of the Art on Bridge Maintenance	Public Works Research Institute under Ministry of Land, Infrastructure, Transport and Tourism
	13:30-15:30	Site visit	
22 nd Apr	10:00-12:00	Visit to Bearing Fabricator	BBM Funabashi Factory
	13:30-15:30	Testing Equipment on Steel Members	Yokogawa Bridge, R&L
23 rd Apr	All day	Off	-
24 th Apr	8:00-10:30	Haneda Airport – Nagasaki Airport	-
	12:00-17:00	Nagasaki Bus Tour	-
25 th Apr	10:00-12:00	lecture[Road Protector System & 3D Measurement]	Nagasaki University
	13:30-15:30	Site visit (NSD Equipment)	
	16:00-18:00	Visit to major bridges in Nagasaki	-
26 th Apr	9:00-13:00	Visit to Repair Works Site	Nagasaki Prefecture
	13:00-18:30	Nagasaki Airport – Haneda Airport	-
27 th Apr	10:00-11:30	Bridge Maintenance Management in Yokohama City	Yokohama City
	13:00-14:00	Visit to Bridge Inspection Site or Repair Works Site	
	16:00-18:00	Lecture [Guidance for Action Plan]	JICA TIC
28 th Apr	9:00-12:00	Making of Action Plan	JICA TIC
	13:00-14:30	Presentation of Action Plan	JICA TIC
	14:30-15:30	Comments & Presentation of Certificate	JICA TIC
29 th Apr	-	Departure from Tokyo	-

3)-2) The 2nd training

The 2nd training in Japan was conducted from 16th to 29th April 2016. 8 participants who played center roles in the Project participated in the training. Participants are shown in the list below.

NO	Name	Title
1	Rowshan Ara Khanam	Project Director & Additional Chief Engineer, Bridge management Wing
2	Mohammad Shabbir Hasan Khan	Superintending Engineer, Planning & Data Circle
3	ShiShir Kanti Routh	Superintending Engineer, 3 rd Shitalakhya Bridge Project
4	A.K. Shamsuddin Ahmed Nannu	Project Manager & Executive Engineer, BMMS Division
5	Santanu Palit	Deputy Project Manager & Sub-Divisional Engineer, BMMS Sub-Division

6	Md. Shafiul Azam	Executive Engineer, Data Base Division
7	Abdur Rahman Kaoser	Executive Engineer, Bridge Design Division - 3
8	Md. Mohibul Haque	Executive Engineer, Manikgonj Road Division, Manikgonj

The training schedule is as below.

Date	Time	Contents	Place
5 th Nov		Arrival in Japan	-
6 th Nov	AM	Briefing Session	JICA Kansai
	PM	Discussion: Country Report Presentation Lecture: Project Cycle Management	
7 th Nov	AM	Lecture and Site visit: Ibaraki Technical Training Centre	NEXCO - West
	PM	Site Visit: Bridge Repair Works (Ichikawa bridge and Chugoku Expressway), Akashi Kaikyo Bridge	
8 th Nov	AM / PM	Moving to Nagoya Practice: TORAY cloth installation Observation: Product materials Moving to Kakegawa	Toray Industries, Inc.
9 th Nov	AM	Site Visit: Shizuoka Plant of Kyokuto Kowa Corporation	Kyokuto Kowa Corporation
	PM	Site Visit: NEXCO Highway Service Area in Fujigawa Moving to Tokyo	-
10 th Nov	AM	Lecture: Policy on Bridge Maintenance & Management in Japan	MLIT (the Ministry of Land, Infrastructure, Transport & Tourism)
	PM	Lecture: Maintenance of steel bridge Site Visit and observation: Examination equipment of bridge materials	Yokogawa in Chiba
11 th Nov		Off	-
12 th Nov	AM	Off	-
	PM	Moving to Nagasaki	-
13 th Nov	AM	Lecture: Michimori Project Lecture: Long-term monitoring of structures by multipoint vibration sensing Lecture: Status quo of bridge maintenance and management by local government	Nagasaki University, Japan Bridge & Structure Institute, Inc.
	PM	Practice: Detail Inspection Equipment Site Visit: Major Bridges (MEGAMI-Ohashi, HIMIYUME-Ohashi) in Nagasaki	
14 th Nov	AM	Observation: Bridge on the sea and Megane-bashi bridge	Nagasaki Prefecture Japan Bridge & Structure Institute, Inc.
	PM	Sightseeing in Nagasaki-city Moving to Osaka	-
15 th Nov	AM	Site Visit: Bridge Inspection Works in Kyoto (YAMASHIRO-Ohashi)	Kyoto Prefecture
	PM	Sightseeing in Kyoto-city Moving to Osaka	-
16 th Nov	AM/PM	Lecture: Guidance for action plan making	JICA Kansai
17 th Nov	AM	Presentation of Action Plan	JICA Kansai
	PM	Evaluation Meeting / Closing Ceremony	JICA Kansai
18 th Nov	-	Departure from JAPAN (KANSAI)	-

4) One of the activities for the generation of the project outputs, workshops (WSs) were conducted.

Details of WSs are the following.

No	Name of WS	Date	Participants *1
1	WS1(A1-WS1): Towards the Establishment of Bridge Maintenance Cycle (BMC)	11 th Nov 2015 10:00 -12:50	15
2	WS2 (A2-WS1): Development of Bridge Inspection Manual	13 th Dec 2015, 10:30 -12:00	18
3	WS3 (A2-WS2): Development of Bridge Evaluation Manual	13 th Dec 2015, 12:30 -14:00	18
4	WS4 (A1-WS2): Solution of Issues on Maintenance Work Implementation, Estimate of Annual Work Volume, Necessity & Securing Human Resources	10 th Jan 2016, 10:00 -11:30	14
5	WS5 (A2-WS3): Case Study of Detailed Investigation of Load Capacity	10 th Jan 2016, 11:45 -13:15	14
6	WS6 (A1-WS3): Consideration Regarding Pending Items”	17 th Jan 2016 10:15 -13:15	18
7	WS7 (A1-WS4): Flow of Bridge Maintenance Activities	17 th Jan 2016 13:45 -15:10	17
8	WS8 (A3-WS1): Program Construction of Bridge Management System (BMS)	4 th Feb 2016 10:10 -12:00	16
9	WS9 (A1-WS5): 1) Bridge Maintenance Management Standard (Pre-Draft) 2) Capacity Development Training Plan 3) Review of Existing Bridge Condition Survey Manual	4 th Feb 2016 12:10 - 15:25	16
10	WS10 (A2-WS4): Inspection Procedure, Safety during Inspection & Recording, Contents/Edition Policy of Bridge Inspection Manual	13 th Mar 2016 10:15 - 11:35	16
11	WS11 (A2-WS5): 1) Method of Evaluation of Bridge Element Types & Evaluation Criteria 2) Method of Evaluation of Entire Bridge 3) Judgment of Need for Detailed Investigation	13 th Mar 2016 11:45 - 13:15	16
12	WS12 (A3-WS2): Confirmation of Requirements of BMS(Items of INPUT/OUTPUT)	27 th Mar 2016 10:10 - 12:00	19
13	WS13 (A1-WS6): Bridge Maintenance Management Standard (Draft ver.1)	27 th Mar 2016 12:30 - 13:45	17
14	WS14 (A2-WS6): Bridge Inspection/Evaluation Manual [Inspection] (Draft), Final Draft of Manual Requirement of Addition/Removal/Modification of Contents	10 th Apr 2016 10:05 - 11:55	18
15	WS15 (A2-WS7): Bridge Inspection/Evaluation Manual [Evaluation] A) Bridge and Culvert Types B) Naming of Evaluation Category (Evaluation of Bridge Element Types) C) Unification of Naming (Evaluation of Entire Bridge) D) Impact Level (Evaluation of Entire Bridge)	10 th Apr 2016 12:10 - 13:20	18
16	WS16 (A1-WS7): Bridge Maintenance Management Standard, Enhancement of Technical Ability A) Significance of Enhancement of Technical Ability B) Methodology of Enhancement of Technical Ability C) Internal Activities D) Other Activities	10 th Apr 2016 13:50 - 14:25	16
17	WS17 (A1-WS8): Bridge Maintenance Management Standard (Draft ver.2), Recommendations for Creating Durable Bridges A) 5.1 Planning of Durable Bridges B) 5.2 Design of Durable Bridges	10 th Apr 2016 14:30 - 15:45	16
18	WS18 (A2-WS8) : Development of Bridge	22 nd May 2016	13

	Rehabilitation/Strengthening Manual 1) Overview of Repair Works, Principles & Methods 2) Examples of Rehabilitation/ Strengthening Methods 3) Application and Quality Control 4) Routine Maintenance Works	10:00 - 11:40	
19	WS19 (A3-WS9) : 1) Development of Bridge Rehabilitation/Strengthening Manual; Part 2 : Cost Estimation 2) Development of Bridge Inspection Manual: Essential Viewpoints during Inspection of Bridges.	22 nd May 2016 12:10 - 13:35	13
20	WS20 (A3-WS3): Procedure and Function of Bridge Management System (BMS)	29 th May 2016 10:10 - 13:02	16
21	WS21 (A2-WS10): Development of Bridge Rehabilitation/Strengthening Manual [Method]	19 th Jun 2016 12:10 - 13:55	18
22	WS22 (A2-WS11): Development of Bridge Rehabilitation/Strengthening Manual; Part 2 : Cost Estimation	19 th Jun 2016 13:56 - 14:55	18
23	WS23 (A3-WS4): Introduce of Bridge Management System	29 th Jan 2016 10:30 - 13:05	23

*1: Project members are included.

1-3 Achievement of Output

Achievement of each output is shown in the table below.

Indicators of Outputs		Achievement level
Output 1: Bridge maintenance framework is developed		
1.1	Documents of Bridge maintenance procedure and staff deployment are approved by RHD	<u>Achievement level: Achieved</u> Documents of Bridge maintenance procedure and staff deployment were approved during the 2 nd JCC.
1.2	Bridge inspection based on the bridge maintenance cycle is commenced by RHD	<u>Achievement level: Not achieved</u> Actual Bridge inspection based on the bridge maintenance cycle (e.c. Inspection→Evaluation→Data input (into BMS) →Planning → Rehabilitation/Strengthening (Countermeasure work)) will be done by MTs including C/Ps through the Bridge Inspection in Manikganj Division from the end of November.
1.3	Data management by utilization of BMS is commenced by RHD	<u>Achievement level: Not achieved</u> Once the inspection of all bridges in Manikganj Division is completed, its result will be input into BMS. The commencement of the data management will be done after that.
1.4	Bridge maintenance plan (annual budget and work plans) in model area(s) is prepared	<u>Achievement level: Not achieved</u> After the bridge inspection in Manikganj Division, the inspection data will be input into the BMS. Thereafter, an annual budget plan and activity plan will be prepared.
Output 2: Bridge inspection / evaluation manual and Bridge rehabilitation / strengthening manual are developed		
2.1	Bridge inspection / evaluation manual is approved by RHD	<u>Achievement level: Not achieved</u> The draft of the bridge inspection/evaluation manual was approved at the 3 rd JCC. The final draft of the Manual will be completed after the Manual is modified based on feedback from OJT (1) - (2) and the Inspection in Manikganji Division. The final draft will be approved at the 5 th JCC.
2.2	Bridge rehabilitation / strengthening manual is approved by RHD	<u>Achievement level: Not achieved</u> Same as the achievement status of indicator 2.1.

Output 3: Bridge management system is developed		
3.1	Data accessibility of BMS is improved	<u>Achievement level: Not measured</u> The achievement of the indicator will be measured after the data of all bridges in Manikganj Division is input into the BMS.
3.2	BMS manual is approved by RHD	<u>Achievement level: Not measured</u> Same as the indicator 2.1.
Output 4: Necessary knowledge of bridge management is enhanced by RHD staff		
4.1	75 bridge inspection MT are trained	<u>Achievement level: Not achieved</u> If 75 bridge inspection MT take OJT (1) and Bridge Inspection in Manikganj as planned, it can be said that 75 bridge inspection MT are trained. OJT (1) was done from July to August, 2017 but Bridge Inspection in Manikganj Division will be starting from the end of November, 2017.
4.2	75 bridge rehabilitation MT are trained	<u>Achievement level: Not achieved</u> Once the data of all bridges in Manikganj Division is input into the BMS, an annual budget and work plans will be prepared through OJT (2). At the same time, some bridges to be rehabilitated will be selected and its cost will be calculated.
4.3	75 BMS administrators are trained	<u>Achievement level: Not achieved</u> 75 BMS administrators will be trained during the Bridge Inspection in Manikganj Division.
4.4	Institutional capacity development plan is approved	<u>Achievement level: Not achieved</u> Institutional capacity development plan is not yet prepared.

1-4 Achievement of the Project Purpose

Indicators of Outputs		Achievement level
1	Bridge maintenance cycle is commenced by RHD	Indicators of the Project Purpose will be measured during the 5 th JCC.
2	Necessary training based on the institutional capacity development plan is conducted by Master Trainers (MT).	

1-5 Changes of Risks and Actions for Mitigation

<Version 3>

- As JICA experts have not been allowed to travel to Bangladesh since July 2016 due to the security reason so pre-conditions are not fully fulfilled.

<Version 5>

- Although JICA experts have been allowed to travel to Bangladesh since January 2017, it cannot be said that the stay in Bangladesh ensures the safety.

1-6 Progress of Actions undertaken by JICA

<Version 3>

- JICA Bangladesh played a center role in organizing the 1st and 2nd JCC, such as communicating with Secretary to attend it as chairperson.
- JICA informed the security information through e-mail and SMS promptly to consultants for ensuring consultants' safety. Furthermore, safety briefing for consultants is conducted on a regular basis.

<Version 5>

- Both JICA Headquarter and Bangladesh office have made safety considerations to Japanese experts, providing the latest information on Bangladesh to experts before and after travelling to Bangladesh through the briefing sessions.

1-7 Progress of Actions undertaken by Gov. of Bangladesh

<Version 3>

- Secretary of Road Transport and Highways Division from the Ministry of Road Transport and Bridges attended the 1st and 2nd JCC as chairperson.

<Version 4>

- TPP is approved by the Gov. of Bangladesh.

<Version 5>

- RHD installed security cameras in office building of RHD and located security guards at the entrance of the main gate and office building of RHD. RHD promoted securing the safety of the office for the experts.

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

- No activities for the progress of Environmental and Social Considerations are undertaken.

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

<Version 3>

- Female engineer had been assigned to the Project since the commencement of the Project.

<Version 4>

- New female Project Director & Additional Chief Engineer, RHD has been assigned since January 2017. Although more female engineers who involve in the Project need to be increased, it is difficult to make it because the number of female engineers is lower than those of males relatively.

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.)

<Version 3>

- Current remarkable concern is that the TPP has not been approved by Bangladesh side yet. Given that the TPP is not approved, travelling allowance such as transportation costs, daily allowance and accommodation costs for OJTs participants cannot be secured. As no TPP is approved, no funds are available, thus, the immediate approval process of the TPP should be executed and completed as soon as possible.
- According to RHD, RHD has already sent the revised TPP to the Ministry. Its secretary will sign the TPP and send it to Planning Commission (Ministry of planning). The Planning Commission will approve the TPP as a final step. There is no certainty about the required time in this process. It might take even one or two months.

<Version 4>

- As mentioned in 1-7, TPP is approved by the Gov. of Bangladesh.

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

<Version 3>

- Based on the PDM, the project activities have been delayed due to the security reason. Plan how to catch up activities (for instance a change of the time schedule) delayed will be one of agendas for 3rd JCC.

<Version 4>

- The 3rd JCC (in July, 2016) was not held therefore the issue related to the delay of the work schedule will be an agenda of the 3rd JCC meeting (in March, 2017).

3. Modification of the Project Implementation Plan

3-1 PO

<Version 3>

- Information (the achievement of inputs and activities, etc.) of PO is updated each version.

<Version 4>

- During the 3rd JCC to be held in March 2017, the PO version 4 will be approved.

3-2 Other modifications on detailed implementation plan

- None

4. Preparation of Gov. of Bangladesh toward after completion of the Project

- According to the approved TPP, to make the system sustainable after the completion of the project (i) Senior System Analyst – 01 no. (ii) System Analyst – 01 no. (iii) Computer Programmer – 01 no. (iv) Computer Operator – 01 no. (v) Machinist/Operator – 10 nos. will be recruited in revenue setup of BMMS Division under Bridge Management Wing and the system will be operated from Government of Bangladesh fund.

<II. Project Monitoring Sheet I & II>

- Project Monitoring Sheet I (PDM, Version 5) & II (PO, Version 5) are shared with C/Ps during the 4th JCC.

TO CR of JICA Bangladesh OFFICE**Project Title: BRIDGE MANAGEMENT CAPACITY DEVELOPMENT PROJECT****Version of the Sheet: Ver.6 (Term: 10th July, 2015 – 15th August, 2018)****Name: Yoshimitsu HIYAMA****Title: Team Leader****Submission Date: 29th August 2018****< I. Summary (all achievements are as of 15th August, 2018)>****1. Progress****1-1 Progress of Inputs****1-1-1 Japanese side****<JICA experts dispatched to Bangladesh>**

Since July 2016, JICA experts have not been allowed to get in Bangladesh due to the security reasons. However, JICA experts have been re-dispatched to Bangladesh since January 2017, although there are some restrictions on the length of stay in Bangladesh. Given these circumstances, JICA experts have not been dispatched as planned since July 2016. The actual achievement of dispatched JICA experts is as follows. In January 2017, the dispatch of the JICA experts was re-commenced.

NO	Name	Title	Dispatched Period to Bangladesh
1	Yoshimitsu HIYAMA	Team Leader / Bridge Maintenance Plan	(1 st) 8 th Aug -12 th Sep, 2015 (2 nd) 17 th Oct - 14 th Nov, 2015 (3 rd) 17 th Dec, 2015 - 13 th Feb, 2016 (4 th) 11 th Mar - 15 th Apr, 2016 (5 th) 23 rd Jan - 1 st Feb, 2017 (6 th) 17 th Feb - 8 th Mar, 2017 (7 th) 5 th May - 14 th May, 2017 (8 th) 8 th Jul - 23 rd Jul, 2017 (9 th) 28 th Jul – 2 nd Aug, 2017 (10 th) 22 nd Sep - 6 th Oct, 2017 (11 th) 21 st Nov - 6 th Dec, 2017 (12 th) 12 nd Dec - 22 nd Dec, 2017 (13 th) 10 th Jan - 24 th Jan, 2018 (14 th) 7 th Feb - 21 st Feb, 2018 (15 th) 26 th Feb – 11 th Mar, 2018 (16 th) 7 th May - 22 nd May, 2018 (17 th) 25 th Jun - 11 th Jul, 2018 (18 th) 24 th Jul - 9 th Aug, 2018
2	Ikuo HARAZAKI	Bridge Inspection	(1 st) 17 th Aug - 1 st Sep, 2015 (2 nd) 4 th Dec, 2015 - 6 th Feb, 2016 (3 rd) 4 th Mar - 16 th Apr, 2016
3	Toshiyuki KONISHI	Bridge Evaluation	(1 st) 20 th Aug - 2 nd Sep, 2015 (2 nd) 3 rd Dec - 19 th Dec, 2015 (3 rd) 14 th Jan - 30 th Jan, 2016 (4 th) 3 rd Mar - 18 th Mar, 2016 (5 th) 1 st Apr - 16 th Apr, 2016 (6 th) 20 th Feb - 1 st Mar, 2017 (7 th) 10 th May - 18 th May, 2017 (8 th) 7 th Jul - 23 rd Jul, 2017 (9 th) 21 st Nov - 1 st Dec, 2017 (10 th) 5 th Jan - 19 th Jan, 2018 (11 th) 6 th Feb - 21 st Feb, 2018 (12 th) 26 th Feb - 11 th Mar, 2018 (13 th) 24 th Jul - 9 th Aug, 2018

(Remark: 1. Dispatched period shown in the above table is as of 15th August)

NO	Name	Title	Dispatched Period to Bangladesh
4	Rikiya IIZUKA	Bridge Maintenance Plan (2)	(1 st) 9 th Aug - 4 th Sep, 2015 (2 nd) 8 th Jan - 18 th Mar, 2016 (3 rd) 20 th May - 9 th Jun, 2016 (4 th) 1 st Apr - 13 th Apr, 2018 (5 th) 16 th May - 31 st May, 2018 (6 th) 3 rd Jul - 18 th Jul, 2018
5	Kenichi HIDA	Detailed Survey	(1 st) 16 th Aug - 2 nd Sep, 2015 (2 nd) 31 st Dec, 2015 - 19 th Jan, 2016 (3 rd) 3 rd Mar - 19 th Mar, 2016 (4 th) 27 th Feb - 8 th Mar, 2017 (5 th) 5 th May - 12 th May, 2017 (6 th) 8 th Jul - 23 rd Jul, 2017 (7 th) 12 th Dec - 22 st Dec, 2017 (8 th) 5 th Jan - 12 th Jan, 2018 (9 th) 17 th Jul - 25 th Jul, 2018
6	Yasuo KOSAKA	Bridge Rehabilitation - Strengthening/Bridge Evaluation (2)	(1 st) 16 th Aug - 1 st Sep, 2015 (2 nd) 5 th Nov - 30 th Dec, 2015 (3 rd) 2 nd Mar - 16 th Apr, 2016 (4 th) 7 th May - 2 nd Jul, 2016 (5 th) 28 th Jul - 13 th Aug, 2017 (6 th) 10 th Nov - 24 th Nov, 2017 (7 th) 23 rd Jan - 2 nd Feb, 2018 (8 th) 6 th Jul - 19 th Jul, 2018
7	Yukitomo TATSUMI	Cost Estimate	(1 st) 3 rd Dec - 19 th Dec, 2015 (2 nd) 15 th Mar - 13 th Apr, 2016 (3 rd) 9 th May - 2 nd Jul, 2016 (4 th) 1 st Aug - 13 th Aug, 2017 (5 th) 20 th Jan - 2 nd Feb, 2018 (6 th) 19 th May - 1 st Jun, 2018 (7 th) 10 th Jul - 25 th Jul, 2018
8	Kengo MAKISHIMA	Bridge Management System	(1 st) 20 th Aug - 12 th Sep, 2015 (2 nd) 3 rd Dec - 19 th Dec, 2015 (3 rd) 14 th Jan - 13 th Feb, 2016 (4 th) 17 th Mar - 2 nd Apr, 2016 (5 th) 19 th May - 4 th Jun, 2016 (6 th) 23 rd Jan - 1 st Feb, 2017 (7 th) 24 th Feb - 8 th Mar, 2017 (8 th) 12 th May - 18 th May, 2017 (9 th) 2 nd Jul - 10 th Jul, 2017 (10 th) 21 st Jul - 2 nd Aug, 2017 (11 th) 22 nd Sep - 6 th Oct, 2017 (12 th) 26 th Nov - 12 th Dec, 2017 (13 th) 8 th Jan - 24 th Jan, 2018 (14 ^h) 6 th Feb - 21 st Feb, 2018 (15 th) 26 th Feb - 14 th Mar, 2018 (16 th) 7 th May - 18 th May, 2018 (17 th) 22 nd Jun - 6 th Jul, 2018
9	Kanji OHNO	Bridge Management System (2)	(1 st) 22 nd Jan - 6 th Feb, 2016 (2 nd) 19 th Mar - 3 rd Apr, 2016 (3 rd) 17 th Jun - 1 st Jul, 2016

(Remark: 1. Dispatched period shown in the above table is as of 15th August)

NO	Name	Title	Dispatched Period to Bangladesh
10	Chiaki YAMADA	Project Monitoring	(1 st) 23 rd Aug - 1 st Sep, 2015 (2 nd) 19 th Jan - 30 th Jan, 2016 (3 rd) 18 th Feb - 22 nd Feb, 2017
11	Kengo MAKISHIMA	Project Monitoring (2)	(1 st) 24 th Jul - 9 th Aug, 2018
12	Hideaki YASASHI	Coordinator / Bridge Maintenance Plan (Assistance)	(1 st) 8 th Aug - 2 nd Sep, 2015 (2 nd) 5 th Nov - 21 st Nov, 2015 (3 rd) 14 th Jan - 30 th Jan, 2016 (4 th) 3 rd Mar - 19 th Mar, 2016 (5 th) 23 rd Jan - 1 st Feb, 2017 (6 th) 17 th Feb - 27 th Feb, 2017 (7 th) 10 th May - 18 th May, 2017 (8 th) 2 nd Jul - 10 th Jul, 2017 (9 th) 21 st Jul - 28 th Jul, 2017 (10 th) 9 th Aug - 18 th Aug, 2017 (11 th) 25 th Sep - 6 th Oct, 2017 (12 th) 1 st Dec - 14 th Dec, 2017 (13 th) 29 th Jan - 8 th Feb, 2018 (14 th) 12 th Mar - 23 rd Mar, 2018 (15 th) 7 th May - 17 th May, 2018 (16 th) 22 nd Jun - 4 th Jul, 2018 (17 th) 16 th Jul - 26 th Jul, 2018

(Remark: 1. Dispatched period shown in the above table is as of 15th August)

(Remark: 2. "NO.11 Project Monitoring (2)" took over charge of Project Monitoring from 21st Jun, 2018.)

<Equipment and materials >

NO	Items	Qty	Unit price	Unit	Total amount
1	PC for local staff (Secretary and accountant)	2	32,700	Tk	65,400Tk
2	PC and accessories for the System Manager	1	67,800	Tk	67,800Tk
3	Robotic Camera	2	3,820,000	Yen	7,640,000Yen
4	PC for Counterpart	11	42,900	Tk	47,1900Tk

(Remark: Equipment and materials which have a durable years for 2 years and are more than 50,000Yen are listed.)

<Local staff members (employed by the Project)>

NO	Name	Title of the Project	Engaged Period
1	Md.Abdullah Al Mahmud Bhuiyan	Bridge Engineer	17 th Nov 2015 - 30 th Mar 2017
2	Md. Asaduzzaman	Bridge Engineer	26 th Feb 2017 - at present
3	Abdullah Al Mamun	Bridge Engineer	23 rd Feb 2017 - at present
4	Mr. Anis Sharif	Interpreter/Coordinator	10 th Aug 2015 - at present
5	Nadia Sharmin	Assistant Manager	23 rd Feb 2017 - 28 th Feb 2018
6	Azreen Karim Khan	Assistant Manager	22 nd Feb 2018 – 2 nd May 2018
7	Maisha Samiha Dola	Assistant Manager	10 th May 2018 - at present
8	Ms. Swapna	Office Cleaner	1 st Nov 2015 - at present

1-1-2 Bangladesh side

- Counterpart (C/P) personnel (from RHD) ("Core Member (CM)" in the Project).

Since the project commencement, necessary C/P and CM have been allocated, which have been contributing the better project outputs. PD, APD, PM and DPM are not only C/P but CM, but the others are only CM.

NO	Name	Title	Engaged Period
1	Rowshan Ara Khanam	Project Director & Additional Chief Engineer, Bridge management Wing	22 nd January 2017 - at present
2	Mohammad Shabbir Hasan Khan	Superintending Engineer, Procurement Circle	10 th January 2017 - at present
3	A.K.M. Manir Hossain Pathan, PEng.	Additional Chief Engineer, Cumilla Zone, Former Additional Project Director	8 th August 2015 - at present
4	A.K. Shamsuddin Ahmed Nannu	Project Manager & Executive Engineer, BMMS Division	5 th October 2016 - at present
5	Md. Shafikul Islam	Executive Engineer, Sunamganj Road Division, Former Project Manager (PM)	8 th August 2015 - at present
6	Santanu Palit	Deputy Project Manager & Executive Engineer, Environment Division	1 st November 2016 - at present
7	Shishir Kanti Routh	Superintending Engineer, 3 rd Shitalakhya Bridge Project	2 nd June 2016 - at present
8	Md. Shafiul Azam	Executive Engineer, Chief Engineer's Office	8 th August 2015 - at present
9	Mohammed Shamim Al Mamun	Executive Engineer, Chief Engineer's Office	8 th August 2015 - at present
10	Mohammed Saifuddin	Executive Engineer, Western Bangladesh Bridge Improvement Project, Former Comilla Road Division	8 th August 2015 - at present
11	Nazmul Hasan	Executive Engineer, Bridge Design Division-1	8 th August 2015 - at present
12	Md. Khaled Shaheed	Superintending Engineer, HDM Circle	8 th August 2015 - at present
13	Mohammad Moniruzzaman	Deputy Secretary, Former Executive Engineer, Road Design & Standard Division	2 nd June 2016 - at present
14	Abdur Rahman Kaoser	Executive Engineer, Bridge Design Division - 3	2 nd June 2016 - at present
15	Md. Mohibul Haque	Executive Engineer, Administration & Establishment	20 th April 2017- at present
16	Khan Md. Kamrul Ahsan	Additional Project Director & Superintending Engineer, Planning & Data Circle	15 th February 2018- at present
Former core members are following.			
	Parimal Bikash Sutradhar	Additional Chief Engineer, Project Director	8 th August 2015 - 20 th January 2017
	Md. Sohel Rana	SDE, Deputy Project Manager	8 th August 2015 - 1 st June 2016
	Parveen Sultana	Executive Engineer, RHD Training Centre	8 th August 2015 - 7 th January 2016

● **Equipment and materials for the project office**

NO	Items	Quantity	Unit
1	Office space (inside the training center)	2	Room
2	Office furniture (Refrigerator and water filter included)	2	Set
3	Copy machine	2	Unit

● **Main Inspection Equipment/tools and traffic control facility/tool for OJT**

NO	Items	Quantity	Unit
1	Measuring Tape (2m)	6	Unit
2	Measuring Tape (30m)	6	Unit
3	Black/White Board & Marker	6	Set
4	Step ladder	6	Set
5	Chalk	30	Set
6	Binder (A4 Size)	75	Number
7	Rubber cone	12	Set

1-2 Progress of Activities

1)-1 The table below includes the achievement of activities as of 15th January, 2016 (Version 2), 15th July, 2016 (Version 3) and 15th February, 2017 (Version 4), 15th November (Version 5) and 15th August, 2018 (Version 6).

NO	Activity	Achievement level as of 15 th January, 2016 Version 2	Achievement level as of 15 th July, 2016 Version 3	Achievement level as of 15 th February, 2017, Version 4	Achievement level as of 15 th November, 2017, Version 5	Achievement level as of 15 th August, 2018, Version 6
1. Bridge maintenance framework is developed						
1.1	Actual condition of bridge maintenance is reviewed	<ul style="list-style-type: none"> Hearing on the actual condition of bridge maintenance with RHD headquarter staff, Manikganj Division staff and Sirajganj Division staff was carried out. The condition of bridges in Manikganj Division and Sirajganj Division was inspected on 20th August and from 23rd August until 24th August respectively. Answers of the questionnaire (draft version) were submitted at the end of October, 2015 and actual condition of maintenance was reviewed and analyzed based on them (Baseline Survey). 	<ul style="list-style-type: none"> The results of review on the actual condition of bridge maintenance of RHD were arranged in Chapter 2." Current Situations of the Bridges and Culverts under RHD Jurisdiction" of "Bridge Maintenance Management Standard (Draft)" were explained at WS1 and WS9 (A1-WS5)-1 as the supplement of WS1. 	<ul style="list-style-type: none"> Activities in Output 1 are completed. 		
1.2	Problems / issues on bridge maintenance cycle are identified	<ul style="list-style-type: none"> Problems/issues on bridge maintenance cycle were identified and explained at WS1 (A1-WS1) held on 11th November, 2015. 	<ul style="list-style-type: none"> Based on bridge condition data of existing BMMS, the work volume of bridge maintenance was estimated and the basic policy of bridge maintenance was explained at WS13 (A1-WS6) held on 27th March, 2016. 			

NO	Activity	Achievement level as of 15 th January, 2016 Version 2	Achievement level as of 15 th July, 2016 Version 3	Achievement level as of 15 th February, 2017, Version 4	Achievement level as of 15 th November, 2017, Version 5	Achievement level as of 15 th August, 2018, Version 6
1.3	Institutional framework of bridge maintenance is reviewed	<ul style="list-style-type: none"> Institutional framework of bridge maintenance was reviewed, and the result of review was explained at WS4 (A1-WS2) held on 10th January, 2016. 	<ul style="list-style-type: none"> Recommendations on manpower and organization and recommendations on bridge maintenance fund were explained at WS13 (A1-WS6) held on 27th March, 2016. Furthermore the methodologies to enhance technical abilities were explained at WS16 (A1-WS7) held on 10th April, 2016. 	<ul style="list-style-type: none"> Activities in Output 1 are completed. 		
1.4	Documents of bridge maintenance procedure and standard of staff deployment are prepared	<ul style="list-style-type: none"> Documents of bridge maintenance procedure and standard of staff deployment on bridge inspection were prepared. 	<ul style="list-style-type: none"> Bridge maintenance procedure and staff deployment (Later, referred to as "Bridge Maintenance Management Standard") were explained at WS9 (A1-WS5)-2 held on 2nd February, 2016. 			
2. Bridge inspection / evaluation manual and Bridge rehabilitation / strengthening manual are developed						
2.1	Existing bridge maintenance manual is reviewed and issues/problems on the manual are analyzed	<ul style="list-style-type: none"> Existing bridge maintenance manuals were collected. Based on the answers of the questionnaire (draft version), existing manuals were analyzed. 	<ul style="list-style-type: none"> In consideration of the results of the analysis, "Bridge Inspection and Evaluation Manual" was introduced. 	<ul style="list-style-type: none"> Activities in Output 2.1 are completed. 		

PM Form 3-1 Monitoring Sheet Summary

NO	Activity	Achievement level as of 15 th January, 2016 Version 2	Achievement level as of 15 th July, 2016 Version 3	Achievement level as of 15 th February, 2017, Version 4	Achievement level as of 15 th November, 2017, Version 5	Achievement level as of 15 th August, 2018, Version 6
2.2.1	<p>Bridge inspection / evaluation manual is updated (The achievement of Activity 2.2 is written in Activity 2.2.1 and Activity 2.2.2.)</p> <p>Bridge inspection / evaluation manual (Inspection) is updated</p>	<ul style="list-style-type: none"> Results of the baseline survey submitted by RHD at the end of October was examined. WS2 (A2-WS1) named "Development of Bridge Inspection Manual" was conducted on 13th Dec. During WS, as the first step to modify the existing manual, the condition of bridge inspection in Japan was introduced. Furthermore, "Bridge Condition Survey Manual 2014" was reviewed, and contents of the manual need to be revised were discussed. Reviewing work for "Bridge Condition Survey Manual 2014" will be continued until the next WS in February. 	<ul style="list-style-type: none"> During WS6 (A1-WS3) "Consideration Regarding Pending Items" held on 17th January, the part of "Types of Defects and Rating" in the manual was discussed. WS9 (A1-WS5)-3 named "Review of existing Bridge Condition Survey Manual - 2014" was conducted on 4th February. During WS, "Bridge Condition Survey Manual 2014" was reviewed, and also Draft Contents of new Bridge Inspection Manual - 2016 were discussed. During WS 10 (A2-WS4) named "Bridge Inspection Program and Procedure of Inspection" held on 13th March, Bridge Inspection Program, Composition of Inspection Team, Inspection Tools and Access Equipment, Procedure of Inspection, and Safety during Inspection in the manual were discussed. During WS 14 (A2-WS6) named "Development of Bridge Inspection and Evaluation Manual" held on 10th April, seven chapters and nine appendices were introduced and 1. Background, 2. Introduction, 3. Types of Inspection and Frequency, and 7. Recording of Inventory and Inspection Results were mostly discussed. 	<ul style="list-style-type: none"> Draft of Bridge Inspection /Evaluation Manual was completed. 	<ul style="list-style-type: none"> Draft of Bridge Inspection/ Evaluation Manual (Inspection) was approved during the 3rd JCC. <p><Next Step></p> <ul style="list-style-type: none"> The draft will be utilized during the Bridge Inspection in Manikganji Division from the end of November 2017. The final draft of the Manual will be completed after the Manual is modified based on feedback from OJT (1) – (2) and the Inspection in Manikganji Division. The final draft will be approved during the 5th JCC. 	<ul style="list-style-type: none"> The draft manual was utilized during the Bridge Inspection in Manikganji Division. The final draft manual preparation has been completed. The manual will be approved in 5th JCC.

PM Form 3-1 Monitoring Sheet Summary

NO	Activity	Achievement level as of 15 th January, 2016 Version 2	Achievement level as of 15 th July, 2016 Version 3	Achievement level as of 15 th February, 2017, Version 4	Achievement level as of 15 th November, 2017, Version 5	Achievement level as of 15 th August, 2018, Version 6
2.2.2	Bridge inspection / evaluation manual (Evaluation) is prepared	<ul style="list-style-type: none"> Preparation of Bridge manual / evaluation (Evaluation) is in progress. Following agendas were explained during the WS3 (A2-WS2), conducted 13th December, 2015. <ol style="list-style-type: none"> Purpose of Bridge Evaluation Brief review of Bridge Evaluation Method in practice by RHD Cases of emergency damage Detailed investigation of Bridges The Case of Detailed Investigation of Load Capacity was explained during WS5, conducted on 10th January, 2016. Draft of the evaluation Manual will be prepared in May 2016. 	<ul style="list-style-type: none"> During WS 18 (A2-WS8) named "Essential Points during Inspection of Bridges" held on 22nd May, which is the summary of guidelines for the Inspector for Periodic Inspection, was explained and discussed. Draft of Bridge Inspection and Evaluation Manual was almost completed. 	<ul style="list-style-type: none"> Draft of Bridge Inspection and Evaluation Manual was completed. 	<ul style="list-style-type: none"> Draft of Bridge inspection /evaluation manual (Evaluation) was approved during the 3rd JCC. <p><Next Step></p> <ul style="list-style-type: none"> The draft will be utilized during the Bridge Inspection in Manikganji Division from the end of November 2017. The final draft of the Manual will be completed after the Manual is modified based on feedback from OJT (1) – (2) and the Inspection in Manikganji Division. The final draft will be approved during the 5th JCC. 	<ul style="list-style-type: none"> The draft manual was utilized during the Bridge Inspection in Manikganji Division. The final draft manual preparation has been completed. The manual will be approved in 5th JCC.

PM Form 3-1 Monitoring Sheet Summary

NO	Activity	Achievement level as of 15 th January, 2016 Version 2	Achievement level as of 15 th July, 2016 Version 3	Achievement level as of 15 th February, 2017, Version 4	Achievement level as of 15 th November, 2017, Version 5	Achievement level as of 15 th August, 2018, Version 6
2.3.1	Bridge rehabilitation / strengthening manual (Rehabilitation/strengthening measures) is prepared	<ul style="list-style-type: none"> The implementation of the activity will be commenced in March, 2016. 	<ul style="list-style-type: none"> During WS 18 (A2-WS8) named "Rehabilitation and Strengthening" held on 22nd May, Part 1 Rehabilitation and Strengthening and Part 1-2 Routine Maintenance Works were explained and discussed. During WS 21 (A2-WS10) named "Development of Bridge Rehabilitation/Strengthening Manual" held on 19th June, one chapter and two appendices were introduced and a) Overview, b) Routine Maintenance Works, c) Minor Repair Works, d) Selection flow of Repair Methods and e) Major Repair Methods for different Defects were explained and discussed. Draft of Rehabilitation / Strengthening Manual will be completed in August 2016, yet bridge repair photos of Bangladesh are not enough. 	<ul style="list-style-type: none"> Draft of Rehabilitation/Strengthening Manual (Rehabilitation/strengthening measures) was completed. 	<ul style="list-style-type: none"> Draft of Rehabilitation / Strengthening manual (Rehabilitation/strengthening measures) was approved during the 3rd JCC. <Next Step> <ul style="list-style-type: none"> The draft will be utilized during the OJT (2) and modified based on feedback from OJT (2). The final draft will be approved during the 5th JCC. 	<ul style="list-style-type: none"> The draft manual was utilized during the OJT (2). The final draft manual preparation has been completed. The manual will be approved in 5th JCC.
2.3.2	Bridge rehabilitation / strengthening manual (Cost Estimate) is prepared	<ul style="list-style-type: none"> The implementation of the activity will be commenced in April, 2016. 	<ul style="list-style-type: none"> For the cost estimation manual, the WS19 was held on 22nd May and the WS 22 was held on 19th June. The draft cost estimation manual was almost completed in the WS 22. 	<ul style="list-style-type: none"> Draft of Bridge rehabilitation / Strengthening manual (Cost Estimate) was completed. 	<ul style="list-style-type: none"> Draft of Rehabilitation / Strengthening manual (Cost Estimate) was approved during the 3rd JCC. <Next Step> <ul style="list-style-type: none"> The draft will be utilized during the OJT (2) and modified based on feedback from OJT (2). The final draft will be approved during the 5th JCC. 	<ul style="list-style-type: none"> The draft manual was utilized during the OJT (2). The final draft manual preparation has been completed. The manual will be approved in 5th JCC.

NO	Activity	Achievement level as of 15 th January, 2016 Version 2	Achievement level as of 15 th July, 2016 Version 3	Achievement level as of 15 th February, 2017, Version 4	Achievement level as of 15 th November, 2017, Version 5	Achievement level as of 15 th August, 2018, Version 6
2.4	Manuals for Bridge maintenance are explained to RHD staff by Master Trainers (MT)	<ul style="list-style-type: none"> The implementation of the activity will be commenced after OJTs. 		<ul style="list-style-type: none"> This activity will be commenced after OJTs. 	<ul style="list-style-type: none"> This activity will be conducted during the Divisional Training Course (DTC) from February to March 2018 after OJT (2). 	<ul style="list-style-type: none"> This activity was completed during the Divisional Training Course (DTC) in all Division after DTC supporting training.
3. Bridge management system is developed						
3.1	Existing BMMS is reviewed and analyzed	<ul style="list-style-type: none"> Existing BMMS opened to public was reviewed. Several points to be improved were identified in BMMS's function of "search" and "display result of search". Reviewing BMMS was completed in September, 2015. JICA experts analyzed shortage of functions and usability of existing BMMS, and interviewed with BMMS division and MIS in RHD. JICA experts and RHD confirmed that it is impossible to improve current BMMS because of technical issue, and new BMS should be constructed as new program. 	<ul style="list-style-type: none"> This Activity had already completed in September, 2015. 			

PM Form 3-1 Monitoring Sheet Summary

NO	Activity	Achievement level as of 15 th January, 2016 Version 2	Achievement level as of 15 th July, 2016 Version 3	Achievement level as of 15 th February, 2017, Version 4	Achievement level as of 15 th November, 2017, Version 5	Achievement level as of 15 th August, 2018, Version 6
3.2	Utilization of BMS is examined together by RHD	<ul style="list-style-type: none"> Examination of development of new BMS is in progress by RHD, with the supports of Japanese BMS experts. BMS basic design report ver.1 was submitted to BMMS division in December 2015. First workshop for BMS WS8 (A3-WS1) will be hold on 4th February 2016. 	<ul style="list-style-type: none"> WS8 (A3-WS1) was held on 4th February to discuss about "reviewing result of current BMMS", "explanation for Basic function of new BMS", "Formation and schedule of BMS construction team". Before this WS, BMS consultant (2) joined in the team. He is professional of System Management to construct computer program. WS 12 (A3-WS2) was held on 27th March. In this WS, "input form", "items", "scores", "weights", "coefficients", "outputted data", "user types and their authority were discussed". WS20 (A3-WS3) was held on 29th May to discuss about "Procedure of BMS" including who should approve the result of each step. 	-----	-----	-----
3.3	Function of BMS is defined and developed	<ul style="list-style-type: none"> Activity 3.3 – 3.6 are not implemented yet as of 15th January 2016 and these activities will be commenced from February. 	<ul style="list-style-type: none"> Our team including System construction team in Bangladesh is progressing with construction of BMS. Construction of "Database functions" is almost completed, and "Calculation functions" step are advancing. 	<ul style="list-style-type: none"> WS23 (A3-WS4) was held on 29th January to show and discuss about function of BMS including "Database function", "Calculation function of Bridge Category" and "Calculation function of Remedy measure and cost" by live DEMO (actual operation) of new BMS. C/P gave some question and many idea to improve new BMS. Our team is progressing new BMS based on them. 	<ul style="list-style-type: none"> BMS was developed based on opinions and requests confirmed in WS4. For the seminar in OJT (1), pre-Release version was completed. This version has all basic functions including automatic calculation. BMS was upgraded with many opinions and requests in OJT (1) and released as the release version before Manikganji Inspection. 	<ul style="list-style-type: none"> BMS development was completed with upgrading based on many opinions and requests in OJT (2) and DTC supporting training.

PM Form 3-1 Monitoring Sheet Summary

NO	Activity	Achievement level as of 15 th January, 2016 Version 2	Achievement level as of 15 th July, 2016 Version 3	Achievement level as of 15 th February, 2017, Version 4	Achievement level as of 15 th November, 2017, Version 5	Achievement level as of 15 th August, 2018, Version 6
3.4	Data in existing BMMS is entered into BMS by RHD		<ul style="list-style-type: none"> Activity 3.4 is not implemented yet as of completion of RELEASE version of BMS in September 2016. 	<ul style="list-style-type: none"> Activity 3.4 is not implemented yet as of completion of RELEASE version of BMS in May 2017. 	<ul style="list-style-type: none"> As the result of the BMMS data review, many invalid data were confirmed. It turned out that it is difficult to transfer BMMS data to a new BMS. Activity 3.4 is not implemented yet. The input operation will be carried out in Manikganj Inspection. 	<ul style="list-style-type: none"> This activity was completed in Manikganj Inspection.
3.5	BMS manual for administrators and users is prepared		<ul style="list-style-type: none"> Activity 3.5 is implemented yet as of completion of DEMO version of BMS in August 2016. 	<ul style="list-style-type: none"> Activity 3.5 is implemented yet as of completion of DEMO version of BMS in February 2017. DEMO version of BMS is improved based on opinion in WS23. 	<ul style="list-style-type: none"> The first edition of BMS manual was published in the 3rd JCC. The second edition of BMS manual was published for OJT (1). In order to provide necessary information in accordance with the authority of the BMS user (e.g. public, RHD staff, etc.), 4 different versions for the BMS manual were prepared. 	<ul style="list-style-type: none"> The final draft manual preparation has been completed. The manual will be approved in 5th JCC.
3.6	BMS manual is explained to RHD staff by BMS administrators		<ul style="list-style-type: none"> Activity 3.6 is implemented yet as of completion of RELEASE version of BMS in September 2016. 	<ul style="list-style-type: none"> Section of "How to Use" in manual was explained by our team in WS23. Section of "Logical Explanation" in manual is not implemented yet as of completion of DEMO version of BMS in February 2017. 	<p><u>Bridge Management System Manual:</u></p> <ol style="list-style-type: none"> ① for Bridge Management Wing ② for System Administrators ③ for Inspector & Evaluator ④ for Public Users <ul style="list-style-type: none"> Outline of all function was explained by the expert team in WS4. Outline of BMS and how to use were explained by the expert team in OJT (1). 	<ul style="list-style-type: none"> This activity was completed during the DTC after DTC supporting training.. BMS training for MIS person lectured by system manager of JICA Expert team was completed in May 2018.

NO	Activity	Achievement level as of 15 th January, 2016 Version 2	Achievement level as of 15 th July, 2016 Version 3	Achievement level as of 15 th February, 2017, Version 4	Achievement level as of 15 th November, 2017, Version 5	Achievement level as of 15 th August, 2018, Version 6																														
4.1	On the job trainings (OJTs) on bridge inspection / evaluation in model area(s) are conducted with Bridge inspection / evaluation manual	<p>● Activity 4.1 – 4.5 are not implemented yet as of 15th January 2016.</p>	<p>● Detailed OJTs plan was agreed</p> <table border="1"> <tr> <td>OJT</td> <td>75 MT (65 EE+10HQ Staff)</td> </tr> <tr> <td>Period</td> <td>4 weeks</td> </tr> <tr> <td>Venue</td> <td>Mirpur T/C, Manikganj</td> </tr> <tr> <td>RHD issues</td> <td> <ul style="list-style-type: none"> ● Accommodation (25 participants) (Dhaka 3 weeks, Manikganj 1 week) ● Transportation for field work, necessary vehicles: 6 (min 4 passengers) ● Daily allowance ● Lunch </td> </tr> <tr> <td>Joint Training Course by MT (JTC)</td> <td></td> </tr> <tr> <td>Participants</td> <td>SDE, SAE, (WS) from all SDs in each EE area, 18 from each SDO: min 3, DO:1AE, CO:1AE, ZO:1AE</td> </tr> <tr> <td>Period</td> <td>As soon as possible after OJTs (within 2 weeks) 4 days for each half Zone *First Zone Block: Saturday to Tuesday *Second Zone Block: Tuesday to Friday *1day is for field work</td> </tr> <tr> <td>Venue</td> <td>Each Zone Office</td> </tr> <tr> <td>RHD issue</td> <td> <ul style="list-style-type: none"> ● Accommodation ● Transportation for field work, ● Daily allowance ● Lunch </td> </tr> </table>	OJT	75 MT (65 EE+10HQ Staff)	Period	4 weeks	Venue	Mirpur T/C, Manikganj	RHD issues	<ul style="list-style-type: none"> ● Accommodation (25 participants) (Dhaka 3 weeks, Manikganj 1 week) ● Transportation for field work, necessary vehicles: 6 (min 4 passengers) ● Daily allowance ● Lunch 	Joint Training Course by MT (JTC)		Participants	SDE, SAE, (WS) from all SDs in each EE area, 18 from each SDO: min 3, DO:1AE, CO:1AE, ZO:1AE	Period	As soon as possible after OJTs (within 2 weeks) 4 days for each half Zone *First Zone Block: Saturday to Tuesday *Second Zone Block: Tuesday to Friday *1day is for field work	Venue	Each Zone Office	RHD issue	<ul style="list-style-type: none"> ● Accommodation ● Transportation for field work, ● Daily allowance ● Lunch 	<p>● The period of OJTs have been changed from 4 weeks to 2 weeks.</p> <p>● OJTs schedule (Inspection and Evaluation Training, BMS Training and Rehabilitation & Strengthening Training) was under discussion among the Project. There are three options of the schedule available, and there is a high possibility of Option 2.</p> <table border="1"> <thead> <tr> <th></th> <th>Starting from</th> <th>End at</th> </tr> </thead> <tbody> <tr> <td>Option 1</td> <td>2nd Apr, 2017</td> <td>8th Jun, 2017</td> </tr> <tr> <td>Option 2</td> <td>2nd Apr, 2017</td> <td>15th May, 2017</td> </tr> <tr> <td>Option 3</td> <td>2nd Apr, 2017</td> <td>27th Jun, 2017</td> </tr> </tbody> </table> <p>● Details of the JTC are under discussion.</p>		Starting from	End at	Option 1	2 nd Apr, 2017	8 th Jun, 2017	Option 2	2 nd Apr, 2017	15 th May, 2017	Option 3	2 nd Apr, 2017	27 th Jun, 2017	<p>● OJTs are composed of OJT (1), Bridge Inspection in Manikganj Division and OJT (2).</p> <p>● OJT (1) covers 4 curriculums, 1 Inspection & Evaluation, 2) Bridge Maintenance Management Standard, 3) BMS and 4) Rehabilitation & Strengthening.</p> <p>● It was conducted in three groups (Group A, B and C) in July and August 2017 in Training Center & site of Manikganj Division. Each group has 25 trainees. In total 75 trainees participated in the OJT (1). The summary of the OJT (1) conducted is shown in 1)-2.</p> <p><Next Step></p> <p>● According to the manuals, MT will do "Bridge Inspection & Evaluation and BMS Data Input Program" through the Bridge Inspection in Manikganj Division.</p> <p>● Basically, all bridges in Manikganj Division will be inspected and Bridge data will be input into the BMS.</p>	<p>● OJTs of "Bridge Inspection & Evaluation and BMS data Input" for all bridges in Manikganj Division was completed in Manikganj Inspection and OJT (2).</p>
OJT	75 MT (65 EE+10HQ Staff)																																			
Period	4 weeks																																			
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PM Form 3-1 Monitoring Sheet Summary

NO	Activity	Achievement level as of 15 th January, 2016 Version 2	Achievement level as of 15 th July, 2016 Version 3	Achievement level as of 15 th February, 2017, Version 4	Achievement level as of 15 th November, 2017, Version 5	Achievement level as of 15 th August, 2018, Version 6
4.2	OJTs on prioritizing bridges to be repaired in model area(s) are conducted by utilization of BMS		<ul style="list-style-type: none"> No activities are planned in this term. Detailed schedule of OJTs is not finalized due to unacceptable Terrorism happened on 1st of July in Dhaka. The GOJ has been studying security situation and assurance plan of safety of JICA Experts in Bangladesh, the Consultant Team has been waiting instruction made by GOJ. The Consultant Team shall follow the instruction issued by GOJ. 	<ul style="list-style-type: none"> During and after the OJTs, all bridges in Manikganj Division will be inspected and data of the bridges will be inserted into the BMS. Prioritizing will be done by utilization of BMS after all the bridge data of Manikganj Division is inserted into BMS. 	<ul style="list-style-type: none"> Activities on BMS are shown in 1)-2, OJT (1). <Next Step> Bridge data in Manikganj Division will be input into the BMS through the activity 4.1, bridges that need to be repaired will be prioritized by BMS. 	<ul style="list-style-type: none"> In OJT (2), Bridges in Manikganj Division were prioritized to be remedied with BMS functions based on inputted inspection result of Manikganj Inspection.
4.3	OJTs on selection of bridge rehabilitati on / strengthening measures, cost estimation in model area(s) are conducted with Bridge rehabilitati on / strengthening manual		<ul style="list-style-type: none"> No activities are planned in this term. The timing of prioritization of bridges for repair in the model area (Manikganj Division) by BMS is not clear due to above reason. 	<ul style="list-style-type: none"> When all data of bridges in Manikganj Division are available, further progress can be made. 	<ul style="list-style-type: none"> The summary of the OJT (1) conducted is shown in 1)-2. <Next Step> According to the manuals, the rehabilitation/strengthening measures will be considered according to the result of Activity 4.1. The cost estimation will be conducted according to the result of above rehabilitation/strengthening measures. 	<ul style="list-style-type: none"> In OJT (2), 4 bridges picked up from Manikganj inspection were conducted a study of Rehabilitation and Cost estimation with Bridge rehabilitation / strengthening manual.

PM Form 3-1 Monitoring Sheet Summary

NO	Activity	Achievement level as of 15 th January, 2016 Version 2	Achievement level as of 15 th July, 2016 Version 3	Achievement level as of 15 th February, 2017, Version 4	Achievement level as of 15 th November, 2017, Version 5	Achievement level as of 15 th August, 2018, Version 6
4.4	Advices on supervision of bridge rehabilitati on / strengthening works are given by Expert		<ul style="list-style-type: none"> No activities are planned in this term. The condition for Advices on supervision of bridge rehabilitation / strengthening works by Expert is that contracts of bridge rehabilitation / strengthening works shall be made by RHD, after that JICA Expert can give advices on supervision activities by RHD staffs. When the Consultants Team gets information of contract on bridge repair works, perhaps the Bridge Rehabilitation Expert will make recommendation on supervision works for bridge repair works after site investigation. 	<ul style="list-style-type: none"> There is no progress confirmed from Version 3. 	<ul style="list-style-type: none"> The Bridge rehabilitation/strengthening work list is under preparation by RHD. <Next Step> <ul style="list-style-type: none"> Once the list is prepared, the JICA expert team will give advices and provide suggestions to MTs about bridge works which are difficult to be rehabilitated and strengthened (in the construction list that the budgets are secured for the fiscal year, 2017). 	<ul style="list-style-type: none"> About 3 bridges (Shahbazpur Bridge at Brahmanbaria, Damdama Bridge at Rangpur and Nalka Bridge at Sirajganj), JICA expert and RHD exchanged of opinion of rehabilitation of the bridges, and its reports for each bridge were prepared.
4.5	Institutional capacity development plan is prepared		<ul style="list-style-type: none"> It is under preparation by the JICA consultant in cooperation with C/P. 	<ul style="list-style-type: none"> Institutional capacity development plan is comprised of 2 stages. The 1st stage is preparing the Documents of bridge maintenance procedure and standard of staff deployment which was prepared through the activity of Output-1. The preparation for 2nd stage will start after the OJTs. 	<ul style="list-style-type: none"> No activities related Activity 4.5 are implemented. <Next Step> <ul style="list-style-type: none"> Institutional capacity development plan will be actually prepared from January to June 2018. 	<ul style="list-style-type: none"> Finalized Institutional capacity plan (part.I Development Plan on Procedures and Staff Deployment, part II Human resources Development Plan) was prepared. The plan will be approved during 5th JCC.

1)-2 The Summary of the OJT (1)

Curriculum	Period	Day	Time Table				Remarks
			10:00 - 12:00	12:00 -13:30	13:30 - 15:30	15:30 - 17:30	
Inspection & Evaluation	Group A: 11 th - 13 th July Group B: 15 th - 17 th July Group C: 18 th - 20 th July (For 3 days)	1 st Day	Explanation on Inspection	Lunch	Explanation on Evaluation	Explanation on Detailed Investigation	Bridge Inspection and Evaluation Manual
		2 nd Day	Exercise on Inspection & Evaluation	Lunch	Explanation of Inspection tools & Robot Camera	Demonstration of Detailed Investigation in Training Center	Exercise Material prepared by Consultant Team
		3 rd Day	Demonstration of Inspection by Robot Camera in Manikganj Division	Lunch	Bridge Inspection at the site of Box Culvert	Bridge Inspection at the site of Sreerampur	Bridge Inspection at the site in Manikganj
Bridge Maintenance Management Standard & BMS	Group A: 23 rd - 24 th July Group B: 26 th - 27 th July Group C: 30 th - 31 st July (For 2 days)	4 th Day	Explanation on Bridge Maintenance Management Cycle	Lunch	Explanation on BMS and BMS Utilization	Explanation on BMS and BMS Utilization	Bridge Maintenance Management Standard & BMS Manual
		5 th Day	Transfer of Bridge Data of Manikganj Division from Current BMMS to New BMS	Lunch	Exercise on BMS Utilization	Exercise on BMS Utilization (Bridge Maintenance Needs Plan)	Exercise Material prepared by Consultant Team
Rehabilitation & Strengthening	Group A: 2 nd , 3 rd August Group B: 6 th - 7 th August Group C: 9 th - 10 th August (For 2 days)	6 th Day	Explanation on Bridge Rehabilitation & Strengthening Method	Lunch	Explanation on Bridge Rehabilitation & Strengthening Method	Explanation on Cost Estimation	Explanation on Bridge Rehabilitation & Strengthening Manual by Consultant Team
		7 th Day	Explanation on Cost Estimation	Lunch	Exercise on Bridge Rehabilitation & Strengthening Method	Exercise on Cost Estimation	Exercise Material prepared by Consultant Team

1)-3 The Summary of the OJT (2)

Curriculum	Period	Day	Time Table			Remarks
			10:00 - 12:30	12:30 -13:30	13:30 - 16:00	
Bridge Management System (BMS)	Group A: 15 th - 16 th January	1 st Day	Explanation on 'Outline of the establishment of bridge maintenance plan'	Lunch	Explanation on 'Assumptions on the calculation used by BMS'	Bridge Maintenance Management Standard & BMS Manual
	Group B: 17 th - 18 th January	2 nd Day	Explanation on 'Making of EXCEL tables'	Lunch	Making of Annual Needs Report	Exercise Material prepared by JICA Consultant Team
	Group C: 21 st - 22 nd January (For 2 days)					
Bridge Repair & Cost Estimation	Group A: 24 th - 25 th January	3 rd Day	Repair Plan & Cost Estimation of Bridge-1	Lunch	Repair Plan & Cost Estimation of Bridge-2	Explanation Materials Prepared by JICA Consultants Team.
	Group B: 28 th - 29 th January	4 th Day	Repair Plan & Cost Estimation of Bridge-3	Lunch	Repair Plan & Cost Estimation of Bridge-4	
	Group C: 31 st Jan - 1 st Feb (For 2 days)					

1)-4 The Summary of the DTC Supporting Training

Curriculum	Period	Day	Time Table			Remarks
			10:00 - 11.30	11:30 -12:30	12:30 - 13:30	
Inspection & Evaluation	Group A: 18 th February	1 st Day	Explanation on 'Outline of Bridge Maintenance Cycle' & 'Outline of Bridge Inspection & Evaluation'	Practical Exercise on Bridge Inspection & Evaluation	Lunch	Practical Exercise on Bridge Inspection & Evaluation
	Group B: 28 th February					
	Group C: 4 th March					
	Group D: 7 th March (For 1 Day)					
Bridge Management System (BMS)	Group A: 19 th February	2 nd Day	Explanation on 'Outline of BMS' & BMS Function'	Practical Exercise on BMS	Lunch	Practical Exercise on BMS
	Group B: 1 st March					
	Group C: 5 th March					
	Group D: 8 th March (For 1 Day)					

1)-5 The Summary of the BMS Training for MIS persons
3 MIS persons joined the training.

Month		May-18																													
Day	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	26	27	28	29	30	31
Day of Week	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu
Introduction	Introduction & overview																														
BMS Settings	BMS Configuration, User & User Role, Bridge Configuration, Basic Data Settings, Coefficients, Remedial Measure Settings & Related																														
Bridge Basic Data & Inspection	Bridge inventory data, Bridge inspection workflow, input & export																														
Bridge Evaluation, Remedy Measure, Remedy List	Workflow, Input, Output and Export																														
BMS Installation, Database Setup, Tools & Technologies	BMS Installer, DB, Tools, Activity Log, Certification																														

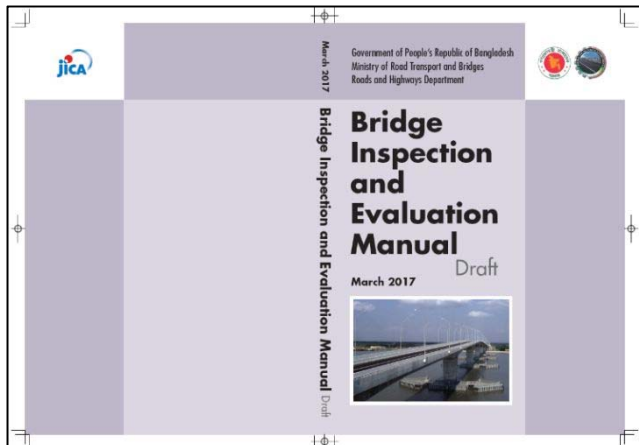
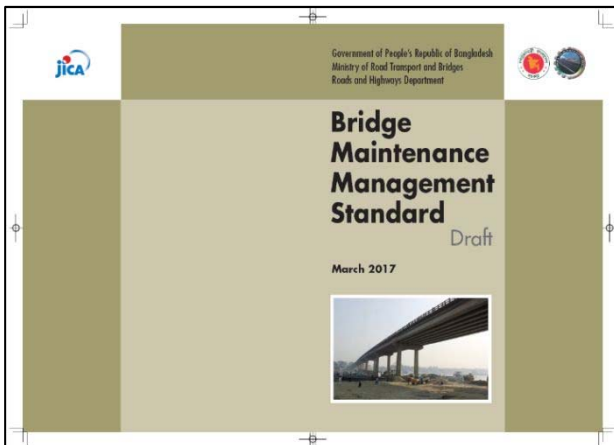
1)-6 The Summary of the Additional OJT

Curriculum	Period	Day	Time Table			Remarks
			10:00 - 11:30	11:30 -12:30	12:30 - 13:30	
Rehabilitation & Cost Estimation	15 th July (For 1 Day)	1 st Day	Explanation on Rehabilitation & Cost Estimation	Practical Exercise on Rehabilitation & Cost Estimation	Lunch	Explanation on Bridge Rehabilitation & Strengthening Manual by Consultant Team Exercise Material prepared by Consultant Team
Bridge inspection & Evaluation	29 th July (For 1 Day)	2 nd Day	Explanation on 'Bridge Maintenance Management Cycle' & 'Bridge Inspection & Evaluation'	Practical Exercise on Bridge Inspection & Evaluation	Lunch	Bridge Inspection & Evaluation Manual Exercise Material prepared by Consultant Team
Bridge Management System (BMS)	30 th July (For 1 Day)	3 rd Day	Explanation on 'Outline of BMS' & 'Functions & BMS'	Practical Exercise on BMS	Lunch	Bridge Management System (BMS) Manual Exercise Material prepared by Consultant Team

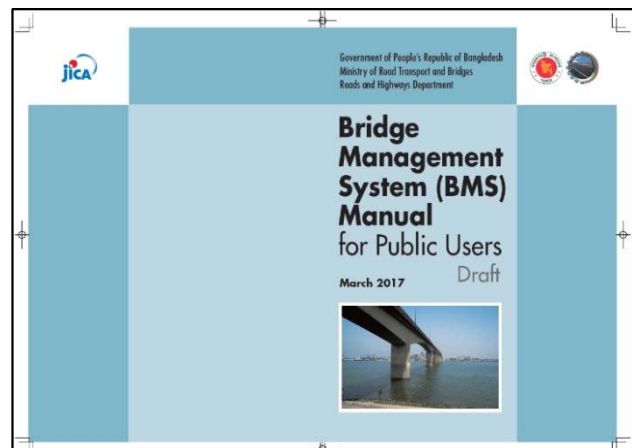
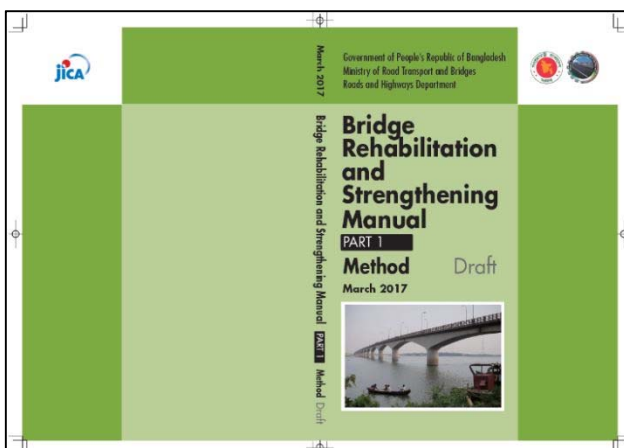
2) Progress of the manual preparation

NO	Name of manual	Progress
1	Bridge Maintenance Management Standard	<p><Version 4> Drafts of 1 Standard and 3 Manuals are completed by the Project. Once these drafts are approved by JCC, they will be utilized for the OJTs. Feedback and comments for the standard and manuals confirmed during the OJTs will be reflected on the final standard and manuals.</p> <p><Version 5> Drafts of 1 Standard and 3 Manuals (3 areas and 7 version /volumes) were approved during the 3rd JCC.</p> <p><Version 6> Drafts of 1 Standard and 3 Manuals (3 areas and 7 version /volumes) was prepared. They will be approved during the 5th JCC.</p>
2	Bridge Inspection & Evaluation Manual	
3	Bridge Rehabilitation & Strengthening Manual <ul style="list-style-type: none"> ● Method ● Cost Estimate 	
4	Bridge Management System Manual <ul style="list-style-type: none"> ● for Bridge Management Wing ● for System Administrators ● for Inspector & Evaluator ● for Public Users 	

<NO1: Bridge Maintenance Management Standard> <NO2: Bridge Inspection & Evaluation Manual>



<NO3: Bridge Rehabilitation & Strengthening Manual> <NO4: Bridge Management System Manual >



3) Training in Japan

3)-1) The 1st training

The 1st training in Japan was conducted from 16th to 29th April 2016. 8 participants who played center roles in the Project participated in the training. Participants are shown in the list below.

NO	Name	Title
1	Parimal Bikash Sutradhar	Project Director
2	A.K.M. Manir Hossain Pathan	Additional Project Director
3	Md. Shafikul Islam	Project Manager
4	Md. Sohel Rana	Deputy Project Manager
5	Mohammed Shamim Al Mamun	Executive Engineer
6	Mohammad Saifuddin	Executive Engineer
7	Najmul Hasan	Executive Engineer
8	Md. Khaled Shaheed	Executive Engineer

The training schedule is as below.

Date	Time	Contents	Place
16 th Apr	-	Departure from Dhaka	-
17 th Apr	-	Arrival at Tokyo	-
18 th Apr	10:00-12:00	JICA Briefing	JICA Tokyo International Center (TIC)
	13:00-14:00	Presentation on Issues	JICA TIC
	14:00-17:00	Lecture [1.Project Cycle Management]	JICA TIC
19 th Apr	10:00-12:00	Lecture [2.Project Cycle Management]	JICA TIC
	13:30-15:30	Lecture [Bridge Maintenance Policy in Japan]	JICA TIC
20 th Apr	10:00-12:00	Lecture[Utilization of Training Centre]	NEXCO Engineering Takasaki TTC
	13:30-16:30	Site visit	
21 st Apr	10:00-12:00	State of the Art on Bridge Maintenance	Public Works Research Institute under Ministry of Land, Infrastructure, Transport and Tourism
	13:30-15:30	Site visit	
22 nd Apr	10:00-12:00	Visit to Bearing Fabricator	BBM Funabashi Factory
	13:30-15:30	Testing Equipment on Steel Members	Yokogawa Bridge, R&L
23 rd Apr	All day	Off	-
24 th Apr	8:00-10:30	Haneda Airport – Nagasaki Airport	-
	12:00-17:00	Nagasaki Bus Tour	-
25 th Apr	10:00-12:00	lecture[Road Protector System & 3D Measurement]	Nagasaki University
	13:30-15:30	Site visit (NSD Equipment)	
	16:00-18:00	Visit to major bridges in Nagasaki	-
26 th Apr	9:00-13:00	Visit to Repair Works Site	Nagasaki Prefecture
	13:00-18:30	Nagasaki Airport – Haneda Airport	-
27 th Apr	10:00-11:30	Bridge Maintenance Management in Yokohama City	Yokohama City
	13:00-14:00	Visit to Bridge Inspection Site or Repair Works Site	
	16:00-18:00	Lecture [Guidance for Action Plan]	JICA TIC
28 th Apr	9:00-12:00	Making of Action Plan	JICA TIC
	13:00-14:30	Presentation of Action Plan	JICA TIC
	14:30-15:30	Comments & Presentation of Certificate	JICA TIC
29 th Apr	-	Departure from Tokyo	-

3)-2) The 2nd training

The 2nd training in Japan was conducted from 5th to 18th November 2017. 8 participants who played center roles in the Project participated in the training. Participants are shown in the list below.

NO	Name	Title
1	Rowshan Ara Khanam	Project Director & Additional Chief Engineer, Bridge management Wing
2	Mohammad Shabbir Hasan Khan	Superintending Engineer, Planning & Data Circle
3	ShiShir Kanti Routh	Superintending Engineer, 3 rd Shitalakhya Bridge Project
4	A.K. Shamsuddin Ahmed Nannu	Project Manager & Executive Engineer, BMMS Division
5	Santanu Palit	Deputy Project Manager & Sub-Divisional Engineer, BMMS Sub-Division
6	Md. Shafiul Azam	Executive Engineer, Data Base Division
7	Abdur Rahman Kaoser	Executive Engineer, Bridge Design Division - 3
8	Md. Mohibul Haque	Executive Engineer, Manikgonj Road Division, Manikgonj

The training schedule is as below.

Date	Time	Contents	Place
5 th Nov		Arrival in Japan	-
6 th Nov	AM	Briefing Session	JICA Kansai
	PM	Discussion: Country Report Presentation Lecture: Project Cycle Management	
7 th Nov	AM	Lecture and Site visit: Ibaraki Technical Training Centre	NEXCO - West
	PM	Site Visit: Bridge Repair Works (Ichikawa bridge and Chugoku Expressway), Akashi Kaikyo Bridge	
8 th Nov	AM / PM	Moving to Nagoya Practice: TORAY cloth installation Observation: Product materials Moving to Kakegawa	Toray Industries, Inc.
9 th Nov	AM	Site Visit: Shizuoka Plant of Kyokuto Kowa Corporation	Kyokuto Kowa Corporation
	PM	Site Visit: NEXCO Highway Service Area in Fujigawa Moving to Tokyo	-
10 th Nov	AM	Lecture: Policy on Bridge Maintenance & Management in Japan	MLIT (the Ministry of Land, Infrastructure, Transport & Tourism)
	PM	Lecture: Maintenance of steel bridge Site Visit and observation: Examination equipment of bridge materials	Yokogawa in Chiba
11 th Nov		Off	-
12 th Nov	AM	Off	-
	PM	Moving to Nagasaki	-
13 th Nov	AM	Lecture: Michimori Project Lecture: Long-term monitoring of structures by multipoint vibration sensing Lecture: Status quo of bridge maintenance and management by local government	Nagasaki University, Japan Bridge & Structure Institute, Inc.
	PM	Practice: Detail Inspection Equipment Site Visit: Major Bridges (MEGAMI-Ohashi, HIMIYUME-Ohashi) in Nagasaki	

Date	Time	Contents	Place
14 th Nov	AM	Observation: Bridge on the sea and Megane-bashi bridge	Nagasaki Prefecture Japan Bridge & Structure Institute, Inc.
	PM	Sightseeing in Nagasaki-city Moving to Osaka	-
15 th Nov	AM	Site Visit: Bridge Inspection Works in Kyoto (YAMASHIRO-Ohashi)	Kyoto Prefecture
	PM	Sightseeing in Kyoto-city Moving to Osaka	-
16 th Nov	AM/PM	Lecture: Guidance for action plan making	JICA Kansai
17 th Nov	AM	Presentation of Action Plan	JICA Kansai
	PM	Evaluation Meeting / Closing Ceremony	JICA Kansai
18 th Nov	-	Departure from JAPAN (KANSAI)	-

3)-3) The 3rd training (cancellation)

The 3rd training in Japan was planned. However, because of some reasons, The training plan was cancelled.

4) One of the activities for the generation of the project outputs, workshops (WSs) were conducted. Details of WSs are the following.

No	Name of WS	Date	Participants *1
1	WS1(A1-WS1): Towards the Establishment of Bridge Maintenance Cycle (BMC)	11 th Nov 2015 10:00 -12:50	15
2	WS2 (A2-WS1): Development of Bridge Inspection Manual	13 th Dec 2015, 10:30 -12:00	18
3	WS3 (A2-WS2): Development of Bridge Evaluation Manual	13 th Dec 2015, 12:30 -14:00	18
4	WS4 (A1-WS2): Solution of Issues on Maintenance Work Implementation, Estimate of Annual Work Volume, Necessity & Securing Human Resources	10 th Jan 2016, 10:00 -11:30	14
5	WS5 (A2-WS3): Case Study of Detailed Investigation of Load Capacity	10 th Jan 2016, 11:45 -13:15	14
6	WS6 (A1-WS3): Consideration Regarding Pending Items"	17 th Jan 2016 10:15 -13:15	18
7	WS7 (A1-WS4): Flow of Bridge Maintenance Activities	17 th Jan 2016 13:45 -15:10	17
8	WS8 (A3-WS1): Program Construction of Bridge Management System (BMS)	4 th Feb 2016 10:10 -12:00	16
9	WS9 (A1-WS5): 1) Bridge Maintenance Management Standard (Pre-Draft) 2) Capacity Development Training Plan 3) Review of Existing Bridge Condition Survey Manual	4 th Feb 2016 12:10 - 15:25	16
10	WS10 (A2-WS4): Inspection Procedure, Safety during Inspection & Recording, Contents/Edition Policy of Bridge Inspection Manual	13 th Mar 2016 10:15 - 11:35	16
11	WS11 (A2-WS5): 1) Method of Evaluation of Bridge Element Types & Evaluation Criteria 2) Method of Evaluation of Entire Bridge 3) Judgment of Need for Detailed Investigation	13 th Mar 2016 11:45 - 13:15	16
12	WS12 (A3-WS2): Confirmation of Requirements of BMS(Items of INPUT/OUTPUT)	27 th Mar 2016 10:10 - 12:00	19
13	WS13 (A1-WS6): Bridge Maintenance Management Standard (Draft ver.1)	27 th Mar 2016 12:30 - 13:45	17

No	Name of WS	Date	Participants *1
14	WS14 (A2-WS6): Bridge Inspection/Evaluation Manual [Inspection] (Draft), Final Draft of Manual Requirement of Addition/Removal/Modification of Contents	10 th Apr 2016 10:05 - 11:55	18
15	WS15 (A2-WS7): Bridge Inspection/Evaluation Manual [Evaluation] A) Bridge and Culvert Types B) Naming of Evaluation Category (Evaluation of Bridge Element Types) C) Unification of Naming (Evaluation of Entire Bridge) D) Impact Level (Evaluation of Entire Bridge)	10 th Apr 2016 12:10 - 13:20	18
16	WS16 (A1-WS7): Bridge Maintenance Management Standard, Enhancement of Technical Ability A) Significance of Enhancement of Technical Ability B) Methodology of Enhancement of Technical Ability C) Internal Activities D) Other Activities	10 th Apr 2016 13:50 - 14:25	16
17	WS17 (A1-WS8): Bridge Maintenance Management Standard (Draft ver.2), Recommendations for Creating Durable Bridges A) 5.1 Planning of Durable Bridges B) 5.2 Design of Durable Bridges	10 th Apr 2016 14:30 - 15:45	16
18	WS18 (A2-WS8) : Development of Bridge Rehabilitation/Strengthening Manual 1) Overview of Repair Works, Principles & Methods 2) Examples of Rehabilitation/ Strengthening Methods 3) Application and Quality Control 4) Routine Maintenance Works	22 nd May 2016 10:00 - 11:40	13
19	WS19 (A3-WS9) : 1) Development of Bridge Rehabilitation/Strengthening Manual; Part 2 : Cost Estimation 2) Development of Bridge Inspection Manual: Essential Viewpoints during Inspection of Bridges.	22 nd May 2016 12:10 - 13:35	13
20	WS20 (A3-WS3): Procedure and Function of Bridge Management System (BMS)	29 th May 2016 10:10 - 13:02	16
21	WS21 (A2-WS10): Development of Bridge Rehabilitation/Strengthening Manual [Method]	19 th Jun 2016 12:10 - 13:55	18
22	WS22 (A2-WS11): Development of Bridge Rehabilitation/Strengthening Manual; Part 2 : Cost Estimation	19 th Jun 2016 13:56 - 14:55	18
23	WS23 (A3-WS4): Introduce of Bridge Management System	29 th Jan 2016 10:30 - 13:05	23

*1: Project members are included.

1-3 Achievement of Output

Achievement of each output is shown in the table below.

Indicators of Outputs		Achievement level
Output 1: Bridge maintenance framework is developed		
1.1	Documents of Bridge maintenance procedure and staff deployment are approved by RHD	<u>Achievement level: Achieved</u> Documents of Bridge maintenance procedure and staff deployment were approved during the 2 nd JCC.
1.2	Bridge inspection based on the bridge maintenance cycle is commenced by RHD	<u>Achievement level: Achieved</u> Actual Bridge inspection based on the bridge maintenance cycle (e.c. Inspection→Evaluation→Data input (into BMS) →Planning → Rehabilitation/Strengthening (Countermeasure work)) was done by MTs including C/Ps through the Bridge Inspection in Manikganj Division during Manikganji inspection and OJT (2).
1.3	Data management by utilization of BMS is commenced by RHD	<u>Achievement level: Achieved</u> Inputting result of inspection of all bridges in Manikganj Division was completed.
1.4	Bridge maintenance plan (annual budget and work plans) in model area(s) is prepared	<u>Achievement level: Achieved</u> In OJT (2), annual budget plans in Manikganj Division was prepared with listing the bridges in the order of high priorities to be repaired based on output of BMS, and work plans was prepared with remedy measures of each bridge outputted by BMS.
Output 2: Bridge inspection / evaluation manual and Bridge rehabilitation / strengthening manual are developed		
2.1	Bridge inspection / evaluation manual is approved by RHD	<u>Achievement level: Not achieved</u> The final draft manual preparation was completed. The final draft will be approved at the 5 th JCC.
2.2	Bridge rehabilitation / strengthening manual is approved by RHD	<u>Achievement level: Not achieved</u> Same as the achievement status of indicator 2.1.
Output 3: Bridge management system is developed		
3.1	Data accessibility of BMS is improved	<u>Achievement level: Approved</u> Inputting result of inspection of all bridges in Manikganj Division was completed.
3.2	BMS manual is approved by RHD	<u>Achievement level: Not Approved</u> Same as the indicator 2.1.
Output 4: Necessary knowledge of bridge management is enhanced by RHD staff		
4.1	75 bridge inspection MT are trained	<u>Achievement level: Achieved</u> 75 bridge inspection MT took OJT (1) (July to August, 2017), Bridge Inspection in Manikganj (from the end of November to December, 2017) and trained bridge inspection.
4.2	75 bridge rehabilitation MT are trained	<u>Achievement level: Achieved</u> 75 bridge rehabilitation MT took OJT (1) (July to August, 2017), Bridge Inspection in Manikganj (from the end of November to December, 2017) and OJT (2) (Jan. to Feb., 2018), and trained rehabilitation and cost estimation by examination of 4 bridges picked up from Manikganji area.
4.3	75 BMS administrators are trained	<u>Achievement level: Achieved</u> 75 BMS administrators were trained by inputting information and result of the Bridge Inspection in Manikganj Division.
4.4	Institutional capacity development plan is approved	<u>Achievement level: Not achieved</u> Institutional capacity development plan was prepared. The plan will be approved during 5th JCC.

1-4 Achievement of the Project Purpose

Indicators of Outputs		Achievement level
1	Bridge maintenance cycle is commenced by RHD	In this project, 75 MTs of RHD learned Bridge maintenance cycle and trained inspection, evaluation, BMS operation, planning and Rehabilitation with model area (Manilganji Division). As the result, Bridge maintenance cycle was commenced in Manikganji Division (one division out of 65 divisions of RHD). In other divisions, Divisional Training Course was completed by EE. Bridge maintenance cycle in all Bangladesh was already prepared and it is going to commence from all Bangladesh inspection after this rainy season.
2	Necessary training based on the institutional capacity development plan is conducted by Master Trainers (MT).	Divisional Training Course based on institutional capacity development plan in Bridge Maintenance Management Standard (Draft) was carried out in 65 divisions of RHD. (The institutional capacity development plan was updated and finalized based on the project result, and will be approved during 5 th JCC.)

1-5 Changes of Risks and Actions for Mitigation**<Version 3>**

- As JICA experts have not been allowed to travel to Bangladesh since July 2016 due to the security reason so pre-conditions are not fully fulfilled.

<Version 5 and 6>

- Although JICA experts have been allowed to travel to Bangladesh since January 2017, it cannot be said that the stay in Bangladesh ensures the safety.

1-6 Progress of Actions undertaken by JICA**<Version 3>**

- JICA Bangladesh played a center role in organizing the 1st and 2nd JCC, such as communicating with Secretary to attend it as chairperson.
- JICA informed the security information through e-mail and SMS promptly to consultants for ensuring consultants' safety. Furthermore, safety briefing for consultants is conducted on a regular basis.

<Version 5 and 6>

- Both JICA Headquarter and Bangladesh office have made safety considerations to Japanese experts, providing the latest information on Bangladesh to experts before and after travelling to Bangladesh through the briefing sessions.

1-7 Progress of Actions undertaken by Gov. of Bangladesh**<Version 3>**

- Secretary of Road Transport and Highways Division from the Ministry of Road Transport and Bridges attended the 1st and 2nd JCC as chairperson.

<Version 4>

- TPP is approved by the Gov. of Bangladesh.

<Version 5>

- RHD installed security cameras in office building of RHD and located security guards at the entrance of the main gate and office building of RHD. RHD promoted securing the safety of the office for the experts.

<Version 6>

- RHD arranged 3~5 policemen to guard office building of RHD during JICA experts stay in the office .

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

- No activities for the progress of Environmental and Social Considerations are undertaken.

1-9 Progress of Considerations on Gender/Peace Building/Poverty Reduction (if applicable)**<Version 3>**

- Female engineer had been assigned to the Project since the commencement of the Project.

<Version 4>

- New female Project Director & Additional Chief Engineer, RHD has been assigned since January 2017. Although more female engineers who involve in the Project need to be increased, it is difficult to make it because the number of female engineers is lower than those of males relatively.

<Version 6>

- RHD and JICA Project team created an environment in Manikganji Inspection, OJT and DTC supporting training which was easy to participate for female engineers.

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.)**<Version 3>**

- Current remarkable concern is that the TPP has not been approved by Bangladesh side yet. Given that the TPP is not approved, travelling allowance such as transportation costs, daily allowance and accommodation costs for OJTs participants cannot be secured. As no TPP is approved, no funds are available, thus, the immediate approval process of the TPP should be executed and completed as soon as possible.
- According to RHD, RHD has already sent the revised TPP to the Ministry. Its secretary will sign the TPP and send it to Planning Commission (Ministry of planning). The Planning Commission will approve the TPP as a final step. There is no certainty about the required time in this process. It might take even one or two months.

<Version 4>

- As mentioned in 1-7, TPP is approved by the Gov. of Bangladesh.

2. Delay of Work Schedule and/or Problems (if any)**<Version 3>**

- Based on the PDM, the project activities have been delayed due to the security reason. Plan how to catch up activities (for instance a change of the time schedule) delayed will be one of agendas for 3rd JCC.

<Version 4>

- The 3rd JCC (in July, 2016) was not held therefore the issue related to the delay of the work schedule will be an agenda of the 3rd JCC meeting (in March, 2017).

<Version 6>

- The 5th JCC (in 5th August, 2018) was put off to 29th August, 2018 due to the security reason.

3. Modification of the Project Implementation Plan**3-1 PO****<Version 3>**

- Information (the achievement of inputs and activities, etc.) of PO is updated each version.

<Version 4>

- During the 3rd JCC to be held in March 2017, the PO version 4 will be approved.

3-2 Other modifications on detailed implementation plan

- The project period has been extended until 2nd November 2018, however, the actual project activities will be completed in 2nd September 2018.

4. Preparation of Gov. of Bangladesh toward after completion of the Project

- According to the approved TPP, to make the system sustainable after the completion of the project (i) Senior System Analyst – 01 no. (ii) System Analyst – 01 no. (iii) Computer Programmer – 01 no. (iv) Computer Operator – 01 no. (v) Machinist/Operator – 10 nos. will be recruited in revenue setup of BMMS Division under Bridge Management Wing and the system will be operated from Government of Bangladesh fund.

<II. Project Monitoring Sheet I & II>

- Project Monitoring Sheet I (PDM, Version 6) & II (PO, Version 6) are shared with C/Ps during the 5th JCC.