

(18) PDM Amendment-2 (4 persons)_ 2018/10/16

**MINUTES OF MEETINGS
BETWEEN
JAPAN INTERNATIONAL COOPERATION AGENCY
AND
THE AUTHORITIES CONCERNED OF
THE ISLAMIC REPUBLIC OF PAKISTAN
FOR AMENDMENT OF THE RECORD OF DISCUSSIONS
ON
THE PROJECT FOR TECHNICAL ASSISTANCE ON IMPLEMENTATION OF
BRIDGE MANAGEMENT SYSTEM
IN NHA**

The Japan International Cooperation Agency (hereinafter referred to as "JICA") and National Highway Authority hereby agree that the Attached PDM on The Project for Technical Assistance on Implementation of Bridge Management System In NHA will be amended as follows;

Islamabad, October 16, 2018

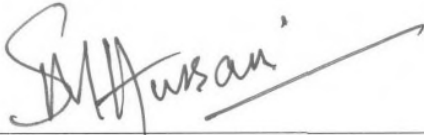


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WITNESSED BY



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AMENDMENT POINTS

(1) Overall Goal

Before	Amended Version
Overall Goal	
Bridge maintenance status improved on the bridges of National Highways in Pakistan.	Bridge <u>inspection &</u> maintenance status improved on the bridges of National Highways in the model area.
<p>Reason:</p> <p>The concept of the model area was confirmed in the meeting at JICA HQ on November 10th, 2017. Considering number of bridges of entire NHA network, repair of the nation-wide bridges before ex-post evaluation (3 years after the project completion) are too ambitious. Overall goal should be scaled down to a realistic scope and be referred to some kind of repair.</p> <p>The model area means jurisdiction of Rawalpindi MU and Wazirabad MU in Punjab North.</p>	
Objectively Verifiable Indicators	
Based on the bridge data, the number of bridge structures in the worst condition has decreased by one-third in [January, 2022] from the start of the Project.	<ol style="list-style-type: none"> 1) The bridges identified in the maintenance plan prepared under the Project are maintained and repaired according to the plan. 2) In the model area, more than [65] bridges are annually inspected and the bridge maintenance plan is annually revised.
<p>Reason:</p> <p>We defined improvement of maintenance status as sustainable revision of bridge maintenance plan and repair of identified bridges according to the plan.</p>	
Means of Verification	
Output data of the BMS	Inspection and maintenance record in the BMS based on which bridge/culvert maintenance plan is prepared as part of Annual Maintenance Plan.
<p>Reason:</p> <ol style="list-style-type: none"> 1) Specify the types of the BMS outputs 2) "Bridge maintenance plan" is added from the viewpoint of BMS sustainability in NHA. 	
Important Assumption	
<ul style="list-style-type: none"> · Copyright of software (source code) · Availability of optimum maintenance budget. · Continuous update of bridge data 	
<p>Reason:</p> <p>Added to achieve Overall Goal.</p> <p>Budget allocation, which is affected by policy priority and major disasters, is the most critical constraint for bridge improvement.</p>	

(2)Project Purpose

Before	Amended Version
Project Purpose	
Annual bridge maintenance plan prepared on the basis of the latest bridge inspection data of entire NHA Network.	Annual bridge maintenance plan prepared on the basis of the latest bridge inspection data of <u>the model area</u> .
Reason: The concept of the model area was confirmed in the meeting at JICA HQ on November 10 th , 2017. Considering number of bridges of entire NHA network, inspection of the nation-wide bridges during the project period is too ambitious to be the project purpose.	
Objectively Verifiable Indicators	
Bridge maintenance budget document with breakdowns prepared by [September, 2018].	Bridge maintenance plan with breakdowns for the model area prepared by [November, 2018].
Reason: The concept of the model area was confirmed in the meeting at JICA HQ on November 10 th , 2017.	
Means of Verification	
Analysis of complete input data to BMS and bridge maintenance budget document (with anticipated budget requirement for forthcoming years)	Analysis of <u>the model area</u> input data to BMS and bridge maintenance plan (with anticipated budget requirement for forthcoming years)
Reason: The concept of the model area was confirmed in the meeting at JICA HQ on November 10 th , 2017.	
Important Assumption	
NHA's road maintenance budget does not decrease from the start of the Project. Natural disasters with the risk of damages on bridges do not occur on National Highways in Pakistan.	Availability of optimum maintenance budget. . Continuous update of bridge data.
Reason: Added to achieve Overall Goal	

(3)Outputs

1) Output1

Before	Amended Version
Output 1	
Manuals, Database and BMS developed for bridge inspection and bridge repair <u>method selection</u>	Manuals, Database and BMS developed for bridge inspection and bridge repair
Reason: Rename according to practice	
Objectively Verifiable Indicators	
1-1. Draft manuals for (1) bridge/ <u>culvert inspection</u> , (2) bridge repair <u>method selection</u> by [December, 2016] and draft manual for (3) data input to <u>Database & BMS</u> developed by [December, 2017].	1-1.Draft manuals for (1) bridge inspection by [December, 2016], for (2) bridge repair by [December, 2016] and for (3) data input developed by [December, 2017]
1-4. 2 types of draft training materials <u>for the master trainers</u> for (1) bridge/ <u>culvert inspection</u> and (2) bridge repair <u>method selection</u> developed by [December, 2016].	1-4. 2 types of draft training materials for (1) bridge/ <u>culvert inspection</u> and (2) bridge repair developed by [December, 2016].
Reason: Rename according to practice	
Activities	
1-1. Develop 3 types of draft manuals i.e. (1) bridge/ <u>culvert inspection</u> , (2) bridge repair method selection and (3) data input to Database. 1-2. Develop draft bridge/ <u>culvert inspection</u> formats. 1-3. Develop prototype Database & BMS. 1-4. Develop 2 types of draft training materials for training i.e. (1) bridge/ <u>culvert inspection</u> and (2) bridge repair method selection. 1-5. Review and finalize the above 3 types of manuals (Activity 1-1), inspection formats (Activity 1-2), prototypes (Activity 1-3) and 2 types of training materials (Activity 1-4).	1-1 <u>JICA Expert Team</u> develops draft manuals for (1) bridge/ <u>culvert inspection</u> , (2) bridge/ <u>culvert</u> repair and (3) data input. 1-2 <u>JICA Expert Team</u> develops draft bridge/ <u>culvert inspection</u> formats. 1-3 <u>JICA Expert Team</u> develops Prototype Bridge Inspection Database & BMS. 1-4 <u>JICA Expert Team</u> develops draft training materials for (1) bridge/ <u>culvert inspection</u> and (2) bridge/ <u>culvert</u> repair. 1-5 <u>BMU</u> reviews and finalizes the above manuals, inspection formats, prototype and training materials.
Reason: Clarify the practitioner in charge. Rename according to practice.	

2) Output2

Before	Amended Version
Output 2	
<p>Trainers of bridge inspection and bridge repair method selection trained at NHA's HQ and ROs, and bridge inspection and bridge repair method selection of uniformed contents implemented on all the bridges of National Highways in Pakistan.</p>	<p>Bridge/culvert inspection in the model area is implemented after BMS training.</p>
<p>Reason: Clarify the practitioner in charge. Simplify the expression.</p>	
Objectively Verifiable Indicators	
<p>2-1. 3 Master Trainers' training for (1) bridge/culvert inspection and (2) bridge repair method selection implemented by [March 2017], and (3) data input to Database implemented by [September, 2018].</p> <p>2-2. 3 types of training (for (1) bridge/culvert inspection, (2) bridge repair method selection, and (3) data input to Database) implemented by Master Trainers (trained in Activity 2-1) to all field staff by [November, 2017].</p> <p>2-3. Bridge/culvert inspection, bridge repair method selection, and data input to Database completed for all NHA bridges by [June, 2018].</p> <p>2-4. 90% or more results of bridge repair method selection and data input to a bridge inspection database by the staff of MUs evaluated to be accurate by NHA's HO & JICA Experts by [October, 2018].</p> <p>2-5. Certification of master trainers after training by JICA experts (scoring more than 80% in capacity test).</p>	<p>2-1 On-the-job-training (OJT) by JICA Expert Team which enables BMU to implement BMS in NHA by [December, 2018].</p> <p>2-2 Inventory Survey, Bridge Inspection and Data Input Training for NHA engineers.</p> <p>2-3 Bridge/culvert inspection, bridge repair and data input to Database completed in the model area including the representative [36] bridges and [5] culverts by [October, 2018].</p> <p>2-4 The results of bridge repair method selection and data input to a bridge inspection database for model area evaluated to be accurate by BMU & JICA Expert Team by [October, 2018].</p>

Reason:

Clarify the practitioner in charge.

2-1: Training target from Master Trainer to Bridge Management Unit.

2-2: Definition of BMS Training

2-3: Definition of OJT

2-4: Non availability of adequate MU staff

2-5: Deleted because of no Certified Master Trainer

Means of Verification

2-3. Completed bridge inspection formats and input data to a bridge inspection database

2-3 Inspection data of the model area including the representative [36] bridges and [5] culverts in Bridge Inspection Database.

Reason:

Focus on the model area.

Registered data in Bridge Inspection Database instead of the formats and input data.

Activities

2-1. Implement 3 types of master trainer's training for the staff of NHA's HQ and ROs at the target bridges (for (1) bridge /culvert inspection, (2) bridge repair method selection, and (3) data input to Database).

2-2. Implement 3 types of OJT for the field staff by Master Trainers (trained in Activity 2-1), (1) bridge/culvert inspection, (2) bridge repair method selection, and (3) inspection data input to Database.

2-3. Implement (1) bridge/culvert inspection, (2) bridge repair method selection, and (3) data input to Database for all the bridges/culverts, by field staff (trained in Activity 2-1 & 2-2).

2-1 JICA Expert Team provides on-the-job-training (OJT) which enables BMU to manage BMS training in NHA.

2-2 BMU implements BMS training (Inventory Survey Training and Bridge Inspection Training).

2-3 Inventory Survey and Bridge Inspection on-the-job-training (OJT) are implemented after BMS training

2-4 JICA Expert Team reviews the inspection results and ability, and advises BMU to enhance their capacity.

Reason:

Clarify the practitioner in charge.

Simplify the expression.

2-4: Added in order to make capacity building in NHA more fruitful.

3) Output3

Before	Amended Version
Output 3	
3. Data on all the bridges of National Highways in Pakistan input by MUs to Database available to NHA's HQ and ROs.	3. Bridge data of the model area is available with BMU at NHA headquarters and bridge maintenance plan is prepared according to the data.
Reason: Clarify the practitioner in charge. Database will be available only in HQ for the time being.	
Objectively Verifiable Indicators	
3-1. Training for management of BMS implemented by [December, 2017]. 3-2. Data on all the bridges of National Highways in Pakistan input to Database by [October, 2018]. 3-3. Cost estimate necessary for bridge maintenance in the fiscal year of 2019 based on BMS.	3-1 BMS Software Training for BMU by [December, 2018]. 3-2 Analysis of Bridge Inspection Data of the model area included in Bridge Inspection Database (BIDB) using BMS Software. 3-3 Bridge maintenance plan as part of Annual Maintenance Plan, with repair methods and cost estimate for structures in model area including 36 bridges and 5 culverts is formulated.
Reason: Simplify and correct expression.	
Means of Verification	
3-1. Training records and report 3-2. Training records and report 3-3. Input data to Database	3-1 Record of BMS Training 3-2 Output data of BMS (Prioritization) 3-3 Bridge maintenance plan
Reason: Not input data, but output data of BMS analysis.	
Activities	
3-1. Implement training for NHA HQ regarding management of BMS (software and database).	3-1 <u>JICA Expert Team</u> implements BIDB & BMS Software Training for BMU.

3-2. Monitor bridge data input by NHA staff (Activity 2-3) to Database, and data transfer to BMS by HQ RAMD (Road Asset Management Department) staff.	3-2 <u>BMU analyzes Bridge Inspection Data of the model area included in database using BMS Software.</u>
3-3. Prepare the annual bridge/culvert maintenance plan including estimated budget for 2019 based on the data transferred to BMS (Activity 3-2).	3-3 <u>BMU prepares the annual bridge/culvert maintenance plan including budget estimation based on the analysis of registered data in Bridge Inspection Database</u>

Reason:
Clarify the practitioner in charge.

4) Important Assumption for Outputs

Before	Amended Version
Important Assumption	
BMS is continuously in use by NHA for preparation of bridge maintenance plan.	NHA arranges adequate human resources for BMS implementation. NHA allocates enough budget to maintain and repair prioritized bridges in the annual maintenance plan.

Reason:
BMS staff and bridge maintenance budget are necessary to achieve Project Purpose.

5) Important Assumption for Activities

Before	Amended Version
Important Assumption	
	BMS is continuously in use by NHA for preparation of bridge maintenance plan. BMU (Bridge Management Unit) is established in NHA headquarters. BMS organization is gradually established in NHA, who will implement BMS in a sustainable manner.

Reason:
BMU is necessary in Activity 1-5 and to achieve Outputs.
The Sustainable BMS staff necessary to achieve Outputs.

(4) Inputs

1) Inputs (Japanese side)

Before	Amended Version
2. Equipment	
(subject to changes) Non-destructive testing equipment such as · Crack Scale & Test Hammer · Concrete Compression Strength · <u>Crack Depth</u> · <u>Rebar Arrangement</u> · <u>Rebar & Cover</u> · <u>Rebar Corrosion</u> · Carbonation · Server (and Terminals) for Database & BMS (Numbers and specifications will be determined through mutual consultations between JICA and NHA during the implementation of the Project as necessary)	(subject to changes) Non-destructive testing equipment such as · Crack Scale & Test Hammer · Carbonation (Phenolphthalein) · Helmet
Reason: Bridge repair prioritization and budgetary estimation can go without Concrete Strength, Crack Depth and Rebar Detection/Corrosion.	

2) Inputs (Pakistani side)

Before	Amended Version
1. Personnel	
Administrative Personnel 1) Person in Charge: Member (Planning) 2) Project Manager: General Manager (RAMD) 3) Member	Administrative Personnel 1) Person in Charge: Member (Planning) 2) Project Manager: General Manager (RAMD) 3) Project Coordinator:

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<p>Director (Design) Counterpart Personnel</p> <p>1) Project Coordinator: Deputy Director (BMS)</p> <p>2) Assistant Project Coordinator: <u>Assistant Director (BMS)</u></p>	<p>Deputy Director (BMU)-I Counterpart Personnel</p> <p>Deputy Director (BMU)-II Deputy Director (BMU)-III</p>
<p>Reason: Assistant Director (BMS) has never been assigned since the beginning of the Project. BMU is considered as the key persons in NHA BMS and should attend JCC.</p>	

(5)Pre-Conditions

Pre-Conditions	Amended Version
Pre-Conditions	
<ul style="list-style-type: none"> The participants for training by JICA experts (Activity 2-1) must have at least 15 years of remaining service period in NHA. Pakistan, especially Islamabad and Lahore, is continuously safe enough for JICA Experts to implement the activities. 	<p>(delete)</p> <ul style="list-style-type: none"> Pakistan, especially Islamabad and Lahore, is continuously safe enough for <u>JICA Expert Team</u> to implement the activities.
<p>Reason: Internal issues in NHA Unification of terms</p>	

Annex 1: Record of Discussions signed on July 8, 2015

Annex 2: Minutes of Meetings(signed on February 8, 2017)

Annex 3: Minutes of Meetings(signed on November 10, 2017)

Annex 4: Minutes of Meetings(signed on April 13, 2018)

Annex 5: PDM(Version.V)

Annex 6: PO(Version.V)