4. RD, Minutes of Meetings, Minutes of JCC

4.1 List of Minutes of Meetings

No.	Date		Title	Location	Signature
1	2015/7/8	08-Jul-15	Record of Discussion (Origial)	Islamabad	○
2	2016/7/29	29-Jul-16	JCC-1	Islamabad	×
3	2016/12/9	09-Dec-16	JCC-2	Islamabad	×
4	2017/2/8	08-Feb-17	PDM Amendment-1	Islamabad	○
5	2017/5/19	19-May-17	JWG with GM (RAMD)	Islamabad	○
6	2017/7/12	12-Jul-17	JCC-3	Islamabad	○
7	2017/7/21	21-Jul-17	JWG with Member (Planning)	Islamabad	○
8	2017/11/10	10-Nov-17	MM with Chairman and Member (Planning)	JICA-HQ	○
9	2017/12/13	13-Dec-17	JCC-4	Islamabad	○
10	2018/2/27	27-Feb-18	MM with Chairman	Islamabad	×
11	2018/3/12	12-Mar-18	MM with GM (RAMD)	Islamabad	×
12	2018/4/11	11-Apr-18	JCC-5	Islamabad	○
13	2018/4/13	13-Apr-18	Main Points Discussed and PDM Amendment	Islamabad	○
14	2018/6/28	28-Jun-18	MM with GM (RAMD)	Islamabad	×
15	2018/8/10	10-Aug-18	MM with GM (RAMD)	Islamabad	×
16	2018/8/15	15-Aug-18	MM with GM (RAMD)	Islamabad	×
17	2018/10/12	12-Oct-18	MM with GM (RAMD)	Islamabad	×
18	2018/10/16	16-Oct-18	PDM Amendment-2 (4 persons)	Islamabad	○
19	2018/11/8	08-Nov-18	MM with GM (RAMD)	Islamabad	×
20	2018/11/16	16-Nov-18	MM with GM (RAMD)	Islamabad	×
21	2018/12/3	03-Dec-18	JCC-6	Islamabad	○

4.2 Minutes of Meetings

(1) Record of Discussion (Original)_2015/7/8

RECORD OF DISCUSSIONS

ON

THE PROJECT FOR TECHNICAL ASSISTANCE ON IMPLEMENTATION OF BRIDGE MANAGEMENT SYSTEM IN NHA

IN

ISLAMIC REPUBLIC OF PAKISTAN

AGREED UPON BETWEEN

THE AUTHORITIES CONCERNED OF THE ISLAMIC REPUBLIC OF PAKISTAN

AND

JAPAN INTERNATIONAL COOPERATION AGENCY

Islamabad, 8th July 2015

Mitsuyoshi Kawasaki
Chief Representative
Pakistan Office
Japan International Cooperation Agency
Japan

Raja Nowsherwan
Member (Planning)
National Highway Authority
Islamic Republic of Pakistan

WITNESSED BY

Syed Mujtaba Hussain
Joint Secretary (ADB/Japan)
Economic Affairs Division
Ministry of Economic Affairs and Statistics
Islamic Republic of Pakistan

Hameed Akhtar
Director (Roads)
Ministry of Communications
Islamic Republic of Pakistan

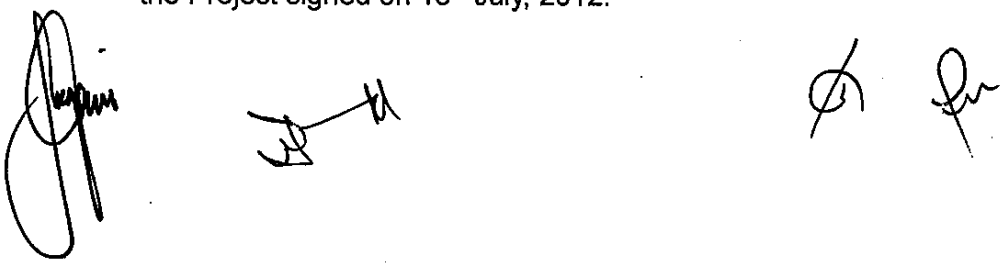
Based on the minutes of meetings on the Second Detailed Planning Survey on the Project for Technical Assistance on Implementation of Bridge Management System in NHA (hereinafter referred to as "the Project") signed on 18th July, 2012 between the authorities concerned of Islamic Republic of Pakistan (hereinafter referred to as "Pakistan") represented by National Highway Authority (hereinafter referred to as "NHA") and the Japan International Cooperation Agency (hereinafter referred to as "JICA"), JICA held a series of discussions with NHA and relevant organizations to develop a detailed plan of the Project.

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

Both parties also agreed that NHA, the counterpart to JICA, will be responsible for the implementation of the Project in cooperation with JICA, coordinate with other relevant organizations and ensure that the self-reliant operation of the Project is sustained during and after the implementation period in order to contribute toward social and economic development of Pakistan.

The Project will be implemented within the framework of the Agreement on Technical Cooperation signed on 30th April, 2005 and the Note Verbales exchanged on 20th April, 2015 between the Government of Japan (hereinafter referred to as "GOJ") and the Government of Pakistan (hereinafter referred to as "GOP").

Appendix 1: Project Description
Appendix 2: Main Points Discussed
Appendix 3: Minutes of Meetings on the Second Detailed Planning Survey for the Project signed on 18th July, 2012.



Appendix 1

PROJECT DESCRIPTION

I. BACKGROUND

Pakistan has the road network of about 263,000km, accounting 92% of domestic passenger traffic and 96% of freight traffic. Approximately 80% of road users in Pakistan rely on the national highways. NHA is responsible for the operation and management of national highway network totaling 12,131km, which is 4.6% of the overall road network of Pakistan, including about 5,000 bridges and 16,000 culverts.

Regarding road pavement maintenance, Highway Development and Management Model 4 (abbreviated as "HDM4") was introduced to NHA in 2003. In addition, Road Asset Management System (hereinafter referred to as "RAMS") was developed as a part of the World Bank's Highway Rehabilitation Project from February 2005 to March 2008. Road pavement maintenance has been implemented by NHA through the utilization of RAMS and HDM4.

Meanwhile, bridges and culverts maintenance has been done without any plans. Therefore, repair or replacement of bridges and culverts are usually taken place only after recognizing serious damages or heavy defects. In this way, proper maintenance of bridges and culverts based on their periodical inspection has not been established despite the high risk of damages and degradation caused by traffic volume increase, over-loading, poor design/construction and so on.

The reasons for this poor bridge maintenance are as follows: firstly, Bridge Management System (hereinafter referred to as "BMS") introduced as a component of RAMS does not function very well in bridge maintenance works of NHA. Secondly, NHA faces the shortage of bridge maintenance budget, which is approximately 4% of the annual road maintenance budget. Thirdly, NHA experiences lack of trained engineers and bridge inspection equipment.

In order to improve the situation, GOP requested GOJ to implement the Project for NHA to utilize BMS more effectively. In response to this request, JICA dispatched the First and the Second Detailed Planning Survey to discuss the contents of the Project with NHA and other authorities concerned of Pakistan. Based on the agreements between JICA and the authorities concerned of Pakistan, the minutes of meetings was signed on 18th July, 2012, which leads both parties to conclude the record of discussions.

II. OUTLINE OF THE PROJECT

1. Details of the Project

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

2. Implementation Structure

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

(1) NHA
[Administrative personnel]
(a) Project Director: Member (Planning)
(b) Project Manager: Director (RAMS)
Project Director and Project Manager will be responsible for overall administration and implementation of the Project.
[Counterpart personnel]
(c) Project Coordinator: Deputy Director (BMS)
(d) Assistant Project Coordinator: Assistant Director (BMS)
Project Coordinator and Assistant Project Coordinator will be responsible for overall coordination for the implementation of the Project.

(2) JICA Experts
The JICA experts will give necessary technical guidance, advice and recommendations to NHA on any matters pertaining to the implementation of the Project.

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

3. Project Sites and Beneficiaries
The main activities of the Project will be implemented at NHA's Headquarters, 13 Regional Offices and 36 Maintenance Units.

The beneficiaries of the Project will be the staff of NHA's Headquarters, 13 Regional Offices and 36 Maintenance Units.

4. Duration
The duration of the Project will be two (2) years and six (6) months. The tentative Plan of Operation (PO) is shown in Annex 2.

5. Reports
JICA experts will prepare and submit the following reports to NHA in English.
(1) Inception Report including the Monitoring Sheet ver. 1 based on PDM and PO at the commencement of the Project

NHA and JICA experts will jointly prepare the following reports in English.
(1) The Monitoring Sheets based on PDM and PO on semiannual basis until the project completion.
(2) Project Completion Report at the time of completion.

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

III. UNDERTAKINGS OF NHA AND GOP

NHA and GOP will take necessary measures to:

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

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

Other privileges, exemptions and benefits will be provided in accordance with the Agreement of Technical Cooperation signed on 30th April, 2005 between GOJ and GOP shown in Annex 5.

IV. MONITORING AND EVALUATION

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

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

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

V. PROMOTION OF PUBLIC SUPPORT

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

VI. Misconduct

If JICA receives information related to suspected corrupt or fraudulent practices

in the implementation of the Project, NHA and relevant organizations shall provide JICA with such information as JICA may reasonably request, including information related to any concerned official of the government and/or public organizations of the Pakistan.
NHA and relevant organizations shall not, unfairly or unfavorably treat the person and/or company which provided the information related to suspected corrupt or fraudulent practices in the implementation of the Project.

VI. MUTUAL CONSULTATION

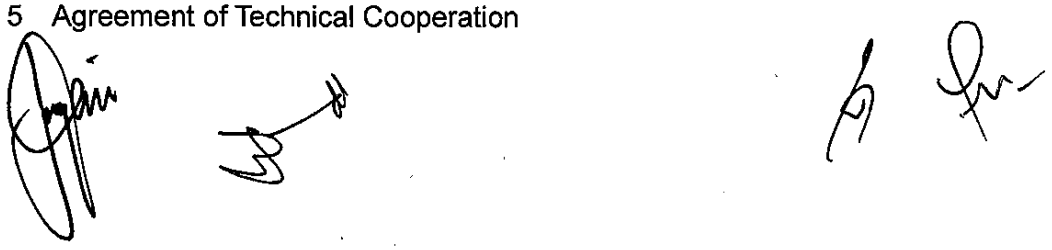
JICA and NHA will consult with each other whenever any major issues arise in the course of Project implementation.

VII. AMENDMENTS

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

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

Annex 1 Logical Framework (Project Design Matrix: PDM)
Annex 2 Tentative Plan of Operation
Annex 3 Project Organization Chart
Annex 4 List of Proposed Members of Joint Coordination Committee
Annex 5 Agreement of Technical Cooperation



Appendix 2

MAIN POINTS DISCUSSED

I. PC-1

The necessary inputs from NHA for the Project can be borne by the ordinary budget of NHA, therefore PC-1 is not required for the Project.

II. PDM & PO

Both sides agreed on the contents of the Project Design Matrix (PDM) and tentative Plan of Operation (PO) as shown in Annex 1 and 2 of Appendix 1 respectively. The PDM and PO are to be flexibly revised according to the progress and achievement of the Project, upon mutual agreement between NHA and JICA at JCC by signing the minutes of meetings.

III. CULVERT INSPECTION

In response to the NHA's request to include culvert inspection into the scope of the Project, the Japanese side agreed to support only the development of a manual for culvert inspection and a culvert inspection format (Activity 1-3). Both sides confirmed that culvert inspection and culvert repair method selection will be out of the scope of the Project and be implemented by NHA at its own responsibility.

IV. TARGET BRIDGES OF ACTIVITY 2-1

The six (6) candidate target bridges of Activity 2-1, which is master trainers' trainings for the staff of NHA's Headquarters and Regional Offices, are listed in Annex 6. After the commencement of the Project, several bridges, from four (4) to nine (9), with common damages and of popular design and length in or around Islamabad will be added to the list by the JICA experts and the counterpart personnel at NHA's Headquarters. Based on this list, about five (5) target bridges will be finally decided through consultations between the JICA experts and the counterpart personnel at NHA's Headquarters.

V. TARGET STAFF OF ACTIVITY 2-1 & 2-2

For Activity 2-1 and Activity 2-2, which is trainings for the staff of Maintenance Units by the master trainers of Regional Offices, the criteria for selection of participants in the trainings will be set up by the counterpart personnel at NHA's Headquarters and the JICA experts. The participants will be finally decided at the beginning of each activity through mutual consultations between the JICA experts and the counterpart personnel at NHA's Headquarters. Upon successful completion of the master trainers' trainings, JICA and NHA will grant a certificate to the participants.

VI. SCHEDULE OF ACTIVITY 2-1, 2-2 & 2-3

Both sides agreed that the schedule for implementation of Activity 2-1, 2-2 and 2-3, which is bridge inspection, bridge repair method selection and data input to a bridge inspection database implemented by the staff of Maintenance Units, will be considered preferably avoiding the flood season, from July to October, and Ramadan for smooth and effective implementation of the Activities.

VII. EQUIPMENT

In response to the request from NHA, non-destructive bridge testing equipment such as Ground Penetrating Radar, Electrochemical Polarization Corrosion Measurement, Measurement by Sonic Testing, Schmidt Hammer, Carbonation Depth Measurement, Crack Scale and Test Hammer will be provided by JICA. The specifications and the number of each equipment to be procured in the Project will be determined through mutual consultations between the JICA experts and the counterpart personnel of the NHA's Headquarters.
Additionally, NHA requested for under bridge inspection trucks in the Second Detailed Planning Survey and JICA will consider their necessity for the achievement of the project purpose during implementation.

VIII. TRAININGS IN JAPAN

During the Second Detailed Planning Survey, the Japanese side took note of the request from NHA for trainings in Japan as a component of the Project and will consider their necessity for the achievement of the project purpose during the implementation of the Project.

Annex 6 List of Candidate Target Bridges of Activity 2-1

Project Design Matrix

Project Title: Project for Technical Assistance on Implementation of Bridge Management System in NHA

Version ●

Dated ●●,●●,●●

Implementing Agency: National Highway Authority (NHA)

Target Group: NHA's Headquarters, Regional Offices, Maintenance Units

Period of Project: XX 2015 – XX 2018, 30 months

Project Site: NHA's Headquarters, Regional Offices, Maintenance Units **Model Site: Bridges on National Highways in Islamabad**

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption	Achievement	Remarks
Overall Goal					
Bridge maintenance status improved on the bridges of National Highways in Pakistan.	Average bridge damage value, calculated by the existing BMS (Smart Bridge), decreased by XX% in [month, year] from the start of the Project.	Output data of the existing BMS			
Project Purpose					
Cost estimate necessary for bridge maintenance every fiscal year implemented on the basis of bridge inspection results of the bridges on National Highways in Pakistan.	Bridge maintenance budget document with breakdowns prepared in [month, year].	Analysis on each of input data to the existing BMS(Smart Bridge) and bridge maintenance budget document (with breakdowns)	・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.		
Outputs					
1. Manuals and a database developed for bridge inspection and bridge repair method selection.	1-1. 3 types of draft manuals (for 1) bridge inspection, 2) data input to a bridge inspection database, and 3) bridge repair method selection) developed by [month, year]. 1-2. A draft bridge inspection format developed by [month, year]. 1-3. A manual for culvert inspection and a culvert inspection format developed by [month, year]. 1-4. A draft bridge inspection database developed by [month, year]. 1-5. 2 types of draft training materials for the master trainers of NHA's HQ and ROs (for 1) bridge inspection and 2) bridge repair method selection) developed by [month, year]. 1-6. Manuals (1), a bridge inspection format (2), a database (4) and training materials (5) finalized by [month, year].	1-1. 3 types of draft manuals 1-2. A draft bridge inspection format 1-3. A manual for culvert inspection and a culvert inspection format 1-4. A draft bridge inspection database 1-5. 2 types of draft training materials 1-6. 3 types of manuals, a bridge inspection format, a database and 2 types of training materials	・The existing BMS (Smart Bridge) is continuously in use by NHA for cost estimate of bridge maintenance.		

2. 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.	2-1. 3 types of master trainers' trainings (for 1) bridge inspection, 2) bridge repair method selection, and 3) data input to a bridge inspection database) implemented by [month, year].	2-1. Training records and reports			
	2-2. 3 types of trainings (for 1) bridge inspection, 2) bridge repair method selection, and 3) data input to a bridge inspection database) implemented by the master trainers (trained in ACTIVITY 2-1) at all the 36 MUs by [month, year].	2-2. Training records and reports			
	2-3. Bridge inspection, bridge repair method selection, and data input to a bridge inspection database completed at all the 36 MUs by [month, year].	2-3. Completed bridge inspection formats and input data to a bridge inspection database			
	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 HQ & JICA Experts by [month, year].	2-4. Input data to a bridge inspection database and its evaluation			
	2-5. XX% or more master trainers of NHA's HQ and ROs scored at the capacity test after the trainings XX% or more higher than that before the trainings.	2-5. Test records and reports			
3. Data on all the bridges of National Highways in Pakistan input by MUs to the existing BMS (Smart Bridge) available to NHA's HQ.	3-1. A training for management of the existing BMS (Smart Bridge) implemented by [month, year].	3-1. Training records and reports			
	3-2. Data on all the bridges of National Highways in Pakistan input to the existing BMS (Smart Bridge) by [month, year].	3-2. Input data to the existing BMS (Smart Bridge)			
	3-3. Cost estimate necessary for bridge maintenance in the fiscal year of 20XX based on the data input to the existing BMS (Smart Bridge).	3-3. Bridge maintenance budget document with breakdowns			

Activities	Inputs		Important Assumption
	The Japanese Side	**The Pakistani Side**	
1-1. Develop 3 types of draft manuals (for 1) bridge inspection, 2) data input to a bridge inspection database, and 3) bridge repair method selection). 1-2. Develop a draft bridge inspection format. 1-3. Develop a manual for culvert inspection and a culvert inspection format. 1-4. Develop a draft bridge inspection database (in Excel/Access). 1-5. Develop 2 types of draft training materials for the master trainers of NHA's HQ and ROs (for 1) bridge inspection and 2) bridge repair method selection). 1-6. Review and finalize the above 3 types of manuals (ACTIVITY 1-1), a format (ACTIVITY 1-2), a database (ACTIVITY 1-4) and 2 types of training materials (ACTIVITY 1-5). 2-1. Implement 3 types of master trainers' trainings for the staff of NHA's HQ and ROs at the target bridges in/around Islamabad (for 1) bridge inspection, 2) bridge repair method selection, and 3) data input to a bridge inspection database). 2-2. By master trainers (trained in ACTIVITY 2-1), implement 3 types of trainings for the staff of MUs (for 1) bridge inspection, 2) bridge repair method selection, and 3) data input to a bridge inspection database). 2-3. By the staff of MUs (trained in ACTIVITY 2-2), implement 1) bridge inspection, 2) bridge repair method selection, and 3) data input to a bridge inspection database for all the bridges 3-1. Implement a training for the staff of NHA's HQ for management of the existing BMS (Smart Bridge). 3-2. Transfer the data from a bridge inspection database input by the staff of MUs to the existing BMS (Smart Bridge). 3-3. Estimate the cost necessary for bridge maintenance in the fiscal year of 20XX based on the data transferred to the existing BMS (Smart Bridge) in ACTIVITY 3-2.	1. EXPERTS 1) Bridge Inspection Expert 2) Bridge Repair Expert 3) BMS Expert 4) Capacity Development Expert 5) Local Coordinator (Pakistani) 2. EQUIPMENT ・Non-destructive testing equipment such as -Ground Penetrating Radar -Electrochemical Polarization Corrosion Measurement and ・Measurement by Sonic Testing ・Schmidt Hammer ・Carbonation Depth Measurement ・Crack Scale ・Test Hammer (Inputs other than indicated here will be determined through mutual consultations between JICA and NHA during the implementation of the Project, as necessary.)	1. PERSONNEL ADMINISTRATIVE PERSONNEL 1) Project Director: Member (Operations) 2) Project Manager: Director (RAMS) COUNTERPART PERSONNEL 1) Project Coordinator: Deputy Director (BMS) 2) Assistant Project Coordinator: Assistant Director (BMS) 2. OFFICE & FACILITIES ・Office for JICA Experts in NHA's HQ Building with office furniture, internet and telephone. 3. ARRANGEMENT ・Arrangements for master trainers' trainings and the trainings at all the 36 MUs. ・Transportation for the field trips of JICA Experts in/around Islamabad. 4. BUDGET ALLOCATION ・Budget for travel expenses and allowances for the participants of master trainers' trainings and the trainings at all the 36 MUs.	・NHA staff, the participants in the trainings (ACTIVITY 2-1 and 2-2), do not retire from NHA. **Pre-Conditions** ・Pakistan, especially Islamabad, is continuously safe enough for JICA Experts to implement the activities. **<Issues and countermesures>**

Annex 1

TENTATIVE PLAN OF OPERATION

PROJECT TITLE: Project for Technical Assistance on Implementation of Bridge Management System in NHA

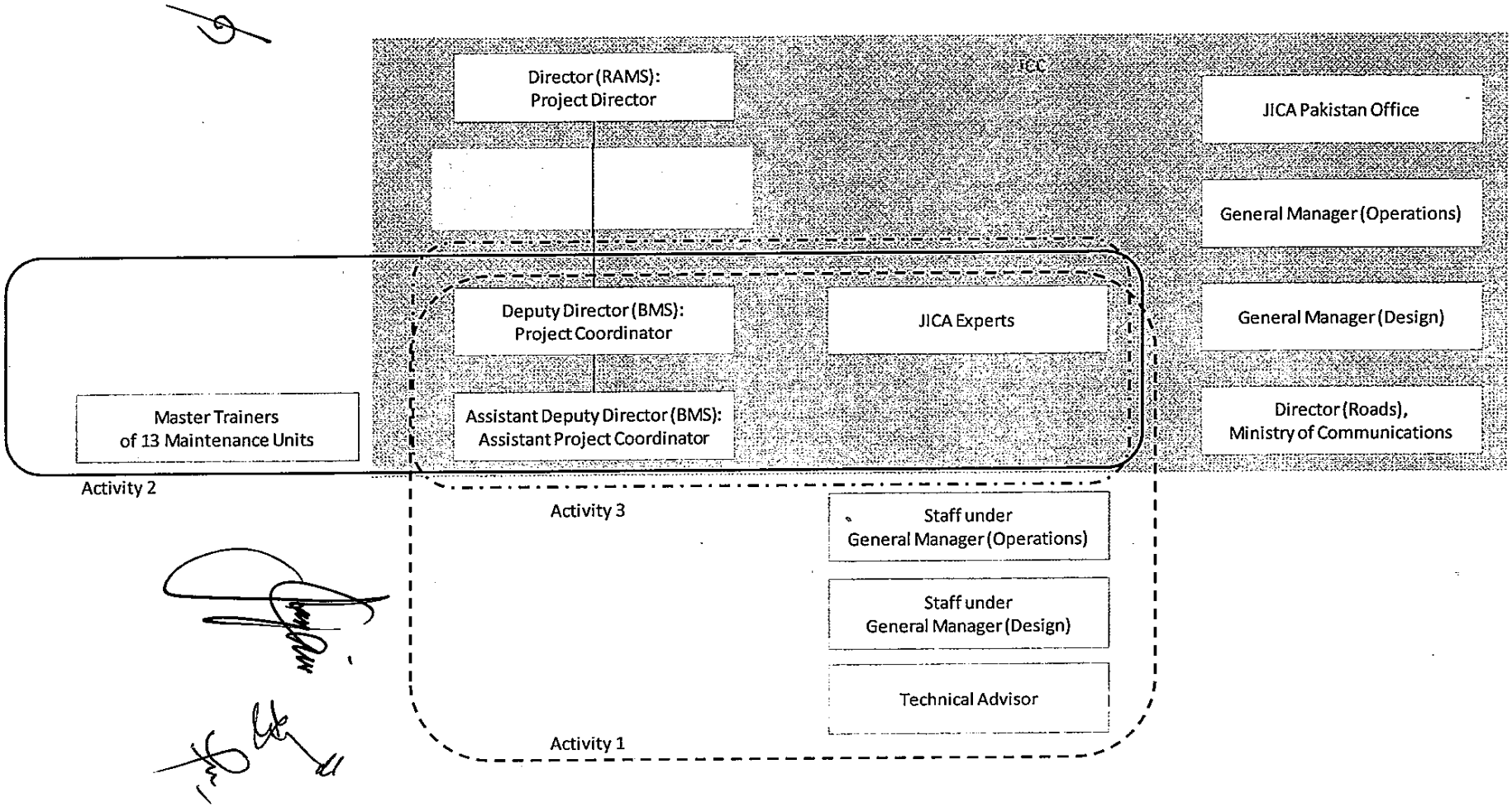
Version ●
Dated ●●, ●●, ●●

	ACTIVITIES	1st Responsible	2nd Responsible
0-1	Analyze the issues to be improved in the current bridge and culvert maintenance by NHA.	NHA (HQ)	JICA Experts
0-2	Study the current bridge and culvert inspection implemented by the staff of MUs on daily basis and regular basis (once a half-year).	NHA (HQ)	JICA Experts
0-3	Study the existing bridge and culvert inspection format (in NHA Code 2005).	NHA (HQ)	JICA Experts
0-4	Study the system of and data input to the existing BMS (Smart Bridge).	NHA (HQ)	JICA Experts
	OUTPUT 1: MANUALS AND A DATABASE DEVELOPED FOR BRIDGE INSPECTION AND BRIDGE REPAIR METHOD SELECTION		
1-1	Develop 3 types of draft manuals (for 1) bridge inspection, 2) data input to a bridge inspection database, and 3) bridge repair method selection).		
1-1-1	Draft a manual for bridge inspection based on the findings of ACTIVITY 0-1 & 0-3.	NHA (HQ)	JICA Experts
1-1-2	Draft a manual for data input to a bridge inspection database referring to the draft database developed in ACTIVITY 1-4.	NHA (HQ)	JICA Experts
1-1-3	Draft a manual for bridge repair method selection based on the findings of ACTIVITY 0-1 & 0-4.	NHA (HQ)	JICA Experts
1-2	Develop a draft bridge inspection format (based on the findings of ACTIVITY 0-1, 0-2, 0-3 & 0-4).	NHA (HQ)	JICA Experts
1-3	Develop a manual for culvert inspection and a culvert inspection format.		
1-3-1	Draft a manual for culvert inspection based on the findings of ACTIVITY 0-1 & 0-2.	NHA (HQ)	JICA Experts
1-3-2	Draft a culvert inspection format based on the findings of ACTIVITY 0-1, 0-2 & 0-3.	NHA (HQ)	JICA Experts
1-4	Develop a draft bridge inspection database (in Excel/Access).		
1-4-1	Study the current IT environment of 12 ROs and 36 MUs including the number of PCs deployed and the condition of internet connection.	NHA (HQ)	JICA Experts
1-4-2	Consider the specification of a bridge inspection database (ex. Excel/Access).	NHA (HQ)	JICA Experts
1-4-3	Develop a draft bridge inspection database.	NHA (HQ)	JICA Experts
1-5	Develop 2 types of draft training materials for the master trainers of NHA's HQ and ROs (for 1) bridge inspection and 2) bridge repair method selection) (referring to the outputs of ACTIVITY 2-1-4 & 2-1-5).	JICA Experts	NHA (HQ)
1-6	Review and finalize the above 3 types of manuals (ACTIVITY 1-1), a format (ACTIVITY 1-2), a database (ACTIVITY 1-4) and 2 types of training materials (ACTIVITY 1-5).		
1-6-1	Review the lessons learned from ACTIVITY 2-1, 2-2 & 2-3.	NHA (HQ)	JICA Experts
1-6-2	Finalize the manuals, a format, a database and training materials referring to the lessons reviewed in ACTIVITY 1-6-1.	NHA (HQ)	JICA Experts
	OUTPUT 2: 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		
2-1	Implement 3 types of master trainers' trainings for the staff of NHA's HQ and ROs at the target bridges in/around Islamabad (for 1) bridge inspection, 2) bridge repair method selection, and 3) data input to a bridge inspection database).		
2-1-1	Set up a criteria for selection of participants in master trainers' trainings.	JICA Experts	NHA (HQ)
2-1-2	Decide the target bridges of master trainers' trainings (about 5 bridges in/around Islamabad).	JICA Experts	NHA (HQ)
2-1-3	Decide the participants in master trainers' trainings (2/3 from NHA's HQ and 1 from each of 13 ROs).	JICA Experts	NHA (HQ)
2-1-4	Prepare the contents and syllabus of master trainers' trainings.	JICA Experts	NHA (HQ)
2-1-5	Carry out a capacity test for the participants of master trainers' trainings (as baseline data).	JICA Experts	NHA (HQ)
2-1-6	Implement 3 types of master trainers' trainings (for 1) bridge inspection, 2) bridge repair method selection, and 3) data input to a bridge inspection database).	JICA Experts	NHA (HQ)
2-1-7	Carry out a capacity test for the participants of master trainers' trainings (as output data).	JICA Experts	NHA (HQ)
2-1-8	Grant a certificate to those participants scored XX% or higher at the capacity test (ACTIVITY 2-1-7).	JICA Experts	NHA (HQ)
2-2	By master trainers (trained in ACTIVITY 2-1), implement 3 types of trainings for the staff of MUs (for 1) bridge inspection, 2) bridge repair method selection, and 3) data input to a bridge inspection database).		
2-2-1	Set up a criteria and minimum requirement of participants from MUs in trainings by master trainers of ROs.	NHA (HQ)	JICA Experts
2-2-2	Prepare schedule for a training at each of 13 ROs and OJT trainings at each of 36 MUs.	NHA (RO)	NHA (HQ)
2-2-3	Decide the participants in a training at each of 13 ROs.	NHA (RO)	NHA (HQ)
2-2-4	Decide the target bridges of OJT trainings at each of 36 MUs.	NHA (RO)	NHA (HQ)
2-2-5	By master trainers, implement 3 types of trainings for the staff of MUs (for 1) bridge inspection, 2) bridge repair method selection, and 3) data input to a bridge inspection database).	NHA (RO)	NHA (HQ)
2-2-6	By master trainers of NHA's HQ and JICA Experts (only if no security concerns), monitor the trainings by master trainers of ROs.	NHA (HQ)	JICA Experts
2-3	By the staff of MUs (trained in ACTIVITY 2-2), implement 1) bridge inspection, 2) bridge repair method selection, and 3) data input to a bridge inspection database for all the bridges under the jurisdiction of NHA.		
2-3-1	Prepare schedule for 1) bridge inspection, 2) brige repair method selection, and 3) data input to a bridge inspection database at each of 36 MUs.	NHA (MU)	NHA (HQ&RO)
2-3-2	By the staff of MUs, implement 1) bridge inspection, 2) bridge repair method selection, and 3) data input to a bridge inspection database for all the bridges of each of 36 MUs.	NHA (MU)	NHA (HQ&RO)
2-3-3	By master trainers of NHA's HQ and JICA experts (only if no security concerns), monitor the 1) bridge inspection, 2) bridge repair method selection, and 3) data input to a bridge inspection database by the staff of MUs.	NHA (HQ)	JICA Experts
2-3-4	By master trainers of ROs, confirm all the bridges of each MU have been inspected and their data input to a bridge inspection database.	NHA (RO)	NHA (HQ)
2-3-5	By master trainers of NHA's HQ and JICA Experts, evaluate the accuracy of 1) bridge inspection, 2) bridge repair method selection, and 3) data input to a bridge inspection database by the staff of MUs.	NHA (HQ)	JICA Experts
	OUTPUT 3: DATA OF BRIDGES ON NATIONAL HIGHWAYS IN PAKISTAN INPUT BY MUs TO THE EXISTING BMS (SMART BRIDGE) AVAILABLE TO NHA'S HQ		
3-1	Implement a training for the staff of NHA's HQ for management of the existing BMS (Smart Bridge).		
3-1-1	Prepare the contents and syllabus of a training for the staff of NHA's HQ for management of the existing BMS (Smart Bridge).	JICA Experts	NHA (HQ)
3-1-2	Implement a training for the staff of NHA's HQ for management of the existing BMS (Smart Bridge).	JICA Experts	NHA (HQ)
3-2	Transfer the data from a bridge inspection database input by the staff of MUs to the existing BMS (Smart Bridge).		
3-2-1	Trial of transferring the sample data from a bridge inspection database input by the staff of MUs to the existing BMS (Smart Bridge).	NHA (HQ)	JICA Experts
3-2-2	Transfer all the data from a bridge inspection database input by the staff of MUs to the existing BMS (Smart Bridge).	NHA (HQ)	JICA Experts
3-3	Estimate the cost necessary for bridge maintenance in the fiscal year of 20XX based on the data transferred to the existing BMS (Smart Bridge) in ACTIVITY 3-2.	NHA (HQ)	JICA Experts
	ADMINISTRATIVE ACTIVITIES		
	Joint Coordination Committee		
	Set-up the Detailed Plan of Operation		
	Submission of Monitoring Sheet		
	Project Completion Report		
	Joint Monitoring		

HQ: Headqurators
RO: Regional Office
MU: Maintenance Unit

Annex 3

PROJECT ORGANIZATION CHART



Annex 4

LIST OF PROPOSED MEMBERS OF JOINT COORDINATION COMMITTEE

[JAPANESE SIDE]

1) JICA Pakistan Office
   - Representative / Program Officer in charge of the Project

2) JICA Experts
   - Bridge Inspection Expert
   - Bridge Repair Expert
   - BMS Expert
   - Capacity Development Expert
   - Local Coordinator (Pakistani)

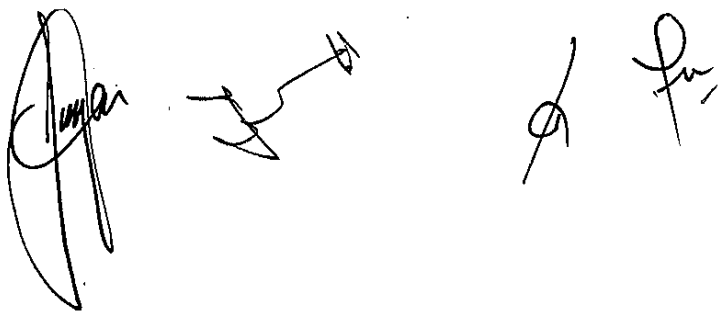
[PAKISTANI SIDE]

- Director (RAMS), NHA: *Project Director*
- Director (Roads), Ministry of Communications
- Director (Design), NHA
- Director (Planning), NHA
- Deputy Director (BMS), NHA: *Project Coordinator*
- Assistant Director (BMS), NHA: *Assistant Project Coordinator*

Chairman of JCC will be Member (Planning) of NHA as Project Director.

JCC may invite experts from outside NHA (e.g. academia) as technical advisors, if deemed necessary.

JCC will be scheduled based on the maximum availability of the members listed above.



AGREEMENT ON TECHNICAL COOPERATION BETWEEN THE GOVERNMENT OF THE ISLAMIC REPUBLIC OF PAKISTAN AND THE GOVERNMENT OF JAPAN

The Government of the Islamic Republic of Pakistan and the Government of Japan,

Desiring to strengthen further the friendly relations existing between the two countries through the promotion of technical cooperation, and

Considering mutual benefits derived from promoting the economic and social development of their respective countries,

Have agreed as follows:

Article I

The two Governments (hereinafter referred to as "the Parties") shall endeavor to promote technical cooperation between the two countries.

Article II

Separate arrangements which govern specific technical cooperation programs carried out under this Agreement shall be agreed upon between the competent authorities of the Parties. The competent authority of the Government of the Islamic Republic of Pakistan is the Ministry of Economic Affairs and Statistics (Economic Affairs Division), and the competent authority of the Government of Japan is the Ministry of Foreign Affairs.

Article III

The following forms of technical cooperation will be carried out by the Japan International Cooperation Agency (hereinafter referred to as "JICA") at its own expense in accordance with the laws and regulations in force in Japan as well as with the arrangements referred to in Article II:

(a) Providing technical training to Pakistani nationals;

(b) dispatching experts (hereinafter referred to as the "Experts") to the Islamic Republic of Pakistan;

(c) dispatching Japanese volunteers with a wide range of technical skills and abundant experience (hereinafter referred to as the "Senior Volunteers") to the Islamic Republic of Pakistan;

(d) dispatching Japanese missions (hereinafter referred to as the "Missions") to the Islamic Republic of Pakistan to conduct surveys of economic and social development projects of the Islamic Republic of Pakistan;

(e) providing the Government of the Islamic Republic of Pakistan with equipment, machinery and materials; and

(f) providing the Government of the Islamic Republic of Pakistan with other forms of technical cooperation as may be decided upon by mutual consent between the Parties.

Article IV

The Government of the Islamic Republic of Pakistan shall ensure that the techniques and knowledge acquired by Pakistani nationals as well as the equipment, machinery and materials provided as a result of the Japanese technical cooperation as set forth in Article III contribute to the economic and social development of the Islamic Republic of Pakistan, and are not utilized for military purposes.

Article V

In case JICA dispatches the Experts, the Senior Volunteers and the Missions, the Government of the Islamic Republic of Pakistan shall:

1. (1) (a) exempt the Experts, the Senior Volunteers and members of the Missions from taxes including income tax, and fiscal charges imposed on or in connection with salaries and any allowances remitted to them from abroad ;

(b) exempt the Experts, the Senior Volunteers, members of the Missions and their families from taxes including customs duties and fiscal charges in respect of the importation of:

(i) personal effects, household effects and consumer goods; and

(ii) one motor vehicle per Expert and per Senior Volunteer assigned to stay in the Islamic Republic of Pakistan;

(c) exempt the Experts and the Senior Volunteers who do not import any motor vehicle into the Islamic Republic of Pakistan from taxes including all indirect taxes and fiscal charges in respect of the local purchase of one motor vehicle per Expert and per Senior Volunteer; and

(d) exempt the Experts and the Senior Volunteers from the registration fee of the motor vehicles mentioned in (b)(ii) and (c).

(2) (a) provide, at its own expense, suitable office and other facilities including telephone and facsimile services necessary for the performance of the duties by the Experts, the Senior Volunteers and the Missions as well as to bear the expenses for their operation and maintenance;

(b) provide, at its own expense, the local staff (including adequate interpreters, if necessary) as well as Pakistani counterparts to the Experts, the Senior Volunteers and the Missions necessary for the performance of their duties;

(c) bear expenses of the Experts and the Senior Volunteers for:

(i) daily transportation to and from their place of work;

(ii) their official travels within the Islamic Republic of Pakistan whenever local conditions and financial possibilities of authorities concerned of the Government of the Islamic Republic of Pakistan may permit; and

(iii) their official correspondence;

(d) provide the assistance for the acquisition of appropriate housing accommodation for the Experts, the Senior Volunteers and their families; and

(e) provide the assistance for receiving medical care and facilities for the Experts, the Senior Volunteers, members of the Missions and their families.

(3) (a) permit the Experts, the Senior Volunteers, members of the Missions and their families to enter, leave and sojourn in the Islamic Republic of Pakistan for the duration of their assignment therein, offer them the assistance for completing the procedures of alien registration requirements, and exempt them from consular fees;

(b) issue identification cards to the Experts, the Senior Volunteers and members of the Missions to secure the cooperation of all governmental organizations necessary for the performance of their duties;

(c) offer the Experts, the Senior Volunteers and their families the assistance for the acquisition of car driving license; and

(d) carry out other measures necessary for the performance of the duties by the Experts, the Senior Volunteers and the Missions.

2. The motor vehicles mentioned in paragraph 1 shall be subject to payment of taxes including customs duties if they are subsequently sold or transferred within the Islamic Republic of Pakistan to individuals or organizations not entitled to exemption from such taxes or similar privileges.

3. The Government of the Islamic Republic of Pakistan shall accord the Experts, the Senior Volunteers, members of the Missions and their families such privileges, exemptions and benefits as are no less favorable than those accorded to experts, senior volunteers, members of missions and their families of any third country or of any international organization performing a similar mission in the Islamic Republic of Pakistan.

Article VI

The Government of the Islamic Republic of Pakistan shall bear claims, if any arises, against the Experts, the Senior Volunteers and members of the Missions resulting from, occurring in the course of, or otherwise connected with, the performance of their duties, except when the Parties agree that such claims arise from gross negligence or willful misconduct on the part of the Experts, the Senior Volunteers or members of the Missions.

Article VII

1. (1) In case JICA provides the Government of the Islamic Republic of Pakistan with equipment, machinery and materials, the Government of the Islamic Republic of Pakistan shall exempt such equipment, machinery and materials from taxes including customs duties and fiscal charges in respect of the importation. The equipment, machinery and materials mentioned above shall become the property of the Government of the Islamic Republic of Pakistan upon being delivered c.i.f. at the port of the disembarkation to competent authorities of the Government of the Islamic Republic of Pakistan.

(2)In case JICA provides the Government of the Islamic Republic of Pakistan with equipment, machinery and materials, the Government of the Islamic Republic of Pakistan shall exempt such equipment, machinery and materials from taxes including all indirect taxes and fiscal charges in respect of the local purchase.

(3)The equipment, machinery and materials mentioned in sub-paragraph (1) and (2) shall be utilized for the purpose specified in the arrangements referred to in Article II unless otherwise agreed upon between the competent authorities of the Parties.

(4)The expenses for the transportation within the Islamic Republic of Pakistan of the equipment, machinery and materials mentioned in sub-paragraph (1) and (2) and the expenses for their replacement, maintenance and repair shall be borne by the Government of the Islamic Republic of Pakistan.

2. (1) The equipment, machinery and materials, prepared by JICA, necessary for the performance of the duties by the Experts, the Senior Volunteers and members of the Missions shall remain the property of JICA unless otherwise agreed upon between the competent authorities of the Parties.

(2) The Government of the Islamic Republic of Pakistan shall exempt the Experts, the Senior Volunteers and members of the Missions from taxes including customs duties and fiscal charges in respect of the importation of the equipment, machinery and materials mentioned in sub-paragraph (1).

(3) The Government of the Islamic Republic of Pakistan shall exempt the Experts, the Senior Volunteers and members of the Missions from taxes including all indirect taxes and fiscal charges in respect of the local purchase of the equipment, machinery and materials mentioned in sub-paragraph (1).

Article VIII

The Government of the Islamic Republic of Pakistan shall maintain close contact, through organizations designated by it, with the Experts, the Senior Volunteers and members of the Missions.

Article IX

1. It is confirmed that JICA may maintain its overseas office in the Islamic Republic of Pakistan(hereinafter referred to as the "Office") with a resident representative and his/her staff to be dispatched from Japan (hereinafter referred to as the "Representative" and the "Staff" respectively) who shall perform the duties to be assigned to them by JICA relative to the technical cooperation programs under this Agreement in the Islamic Republic of Pakistan.

2. The Government of the Islamic Republic of Pakistan shall:

(1)(a) exempt the Representative, the Staff and their families from taxes including income tax and fiscal charges imposed on or in connection with salaries and any allowances remitted to them from abroad;

(b) exempt the Representative, the Staff and their families from taxes including customs duties and fiscal charges in respect of the importation of:

(i) personal effects, household effects and consumer goods; and

(ii) one motor vehicle per Representative and per Staff assigned to stay in the Islamic Republic of Pakistan;

(c) exempt the Representative and the Staff who do not import any motor vehicle into the Islamic Republic of Pakistan from taxes including all indirect taxes and fiscal charges in respect of the local purchase of one motor vehicle per Representative and per Staff;

(d) exempt the Representative and the Staff from the registration fee of the motor vehicles mentioned in (b)(ii) and (c);

(e) permit the Representative, the Staff and their families to enter, leave and sojourn in the Islamic Republic of Pakistan for the duration of their assignment therein, offer them the assistance for completing the procedures of alien registration requirements, and exempt them from consular fees;

(f) issue identification cards and special passes to the Representative and the Staff to enter airport/seaport beyond passport control point to receive and send off the Experts, the Senior Volunteers and members of the Missions;

(g) offer the Representative, the Staff and their families the assistance for the acquisition of car driving license; and

(h) carry out other measures necessary for the performance of the duties by the Representative and the Staff.

(2)(a) exempt the Office from taxes including customs duties and fiscal charges in respect of the importation of the equipment, machinery, motor vehicles and materials necessary for activities of the Office;

(b) exempt the Office from taxes including all indirect taxes and fiscal charges in respect of the local purchase of the equipment, machinery, motor vehicles and materials necessary for the functions of the Office; and

(c) exempt the Office from taxes including income tax and fiscal charges imposed on or in connection with office expenses remitted from abroad.

3. The motor vehicles mentioned in paragraph 2 shall be subject to payment of taxes including customs duties if they are subsequently sold or transferred within the Islamic Republic of Pakistan to individuals or organizations not entitled to exemption from such taxes or similar privileges.

4. The Government of the Islamic Republic of Pakistan shall accord the Representative, the Staff and their families as well as the Office such privileges, exemptions and benefits as are no less favorable than those accorded to representatives, staff and their families as well as offices of any third country or of any international organization performing a similar mission in the Islamic Republic of Pakistan.

Article X

The Government of the Islamic Republic of Pakistan shall take necessary measures to ensure security of the Experts, the Senior Volunteers, members of the Missions, the Representative, the Staff and their families staying in the Islamic Republic of Pakistan.

Article XI

The Government of the Islamic Republic of Pakistan and the Government of Japan shall consult with each other in respect of any matter that may arise from or in connection with this Agreement.

Article XII

1. The provisions of this Agreement shall also apply, after the entering into force of this Agreement, to the specific technical cooperation programs which have commenced prior to the entering into force of this Agreement, and to the Experts, the Senior Volunteers, members of the Missions, the Representative, the Staff and their families staying in the Islamic Republic of Pakistan as well as to the equipment, machinery and materials related to the said programs.

2. The termination of this Agreement shall neither affect the specific technical cooperation programs being carried out until the date of the completion of the said programs, unless otherwise decided upon by mutual consent between the Parties, nor affect the privileges, exemptions and benefits accorded to the Experts, the Senior Volunteers, members of the Missions, the Representative, the Staff and their families staying in the Islamic Republic of Pakistan for the performance of their duties in connection with the said programs.

Article XIII

1.This Agreement shall enter into force on the date of the signature thereof.

2.This Agreement shall remain in force for a period of one year, and shall be automatically renewed every year for another period of one year each, unless either Government has given to the other Government at least six months' written advance notice of its intention to terminate this Agreement.

Article XIV

The Annex to this Agreement forms an integral part of this Agreement, and all reference to the "Agreement" shall include reference to the Annex.

IN WITNESS WHEREOF the undersigned, duly authorized thereto, have signed this Agreement.

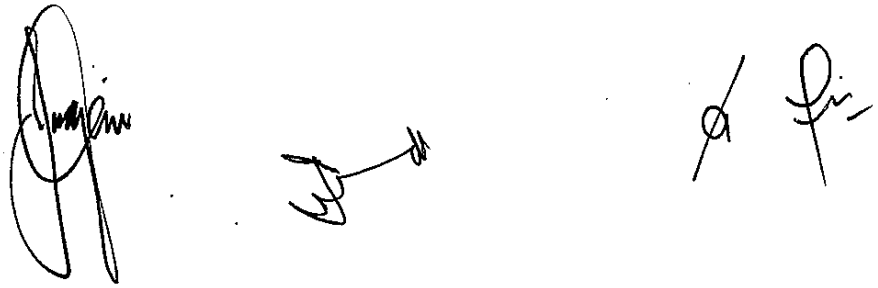
DONE in duplicate, in Japanese and English languages, both texts being equally authentic, at Islamabad on 30th April, 2005.

For the Government of
the Islamic Republic of Pakistan:

For the Government of Japan:

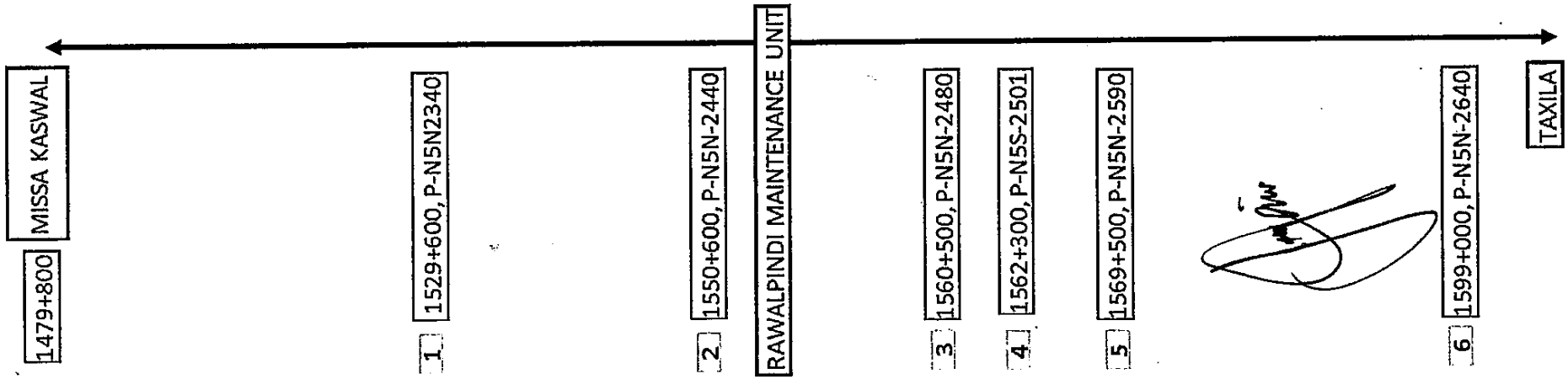
ANNEX

In case the Government of the Islamic Republic of Pakistan should impose consular fees or require the obtainment of import license or certificate of foreign exchange coverage in respect of the importation of items in the future, the Experts, the Senior Volunteers, members of the Mission, the Representative ,the Staff and their families as well as the Office shall be exempted from such consular fees or such requirement, in respect of the importation of the items referred to in Article V.1.(1)(b), Article Ⅶ.1.(1) and 2.(2), and Article Ⅸ.2.(1)(b) and 2.(2)(a).



LIST OF CANDIDATE TARGET BRIDGES OF ACTIVITY 2-1

	CHAINAGE	ID No. (on BMS)	BRIDGE TYPE	BRIDGE LENGTH	MAJOR DEFECTS
1	1529+600	P-N5N2340	Concrete Arch	363.144m, 15 spans	(1) drainage (2) scouring (3) railing (4) expansion joint
2	1550+600	P-N5N-2440	Reinforced Concrete Girder	21.495m (+10.257+), 3 spans	(1) crack on abutment (2) crack on beam
3	1560+500	P-N5N-2480	Reinforced Concrete Girder	38.933m, 3 spans	(1) exposed reinforcing bar (2) spalling at bottom of girder (3) railing
4	1562+300	P-N5S-2501	Brick Arch	3.31m, 1 span	(1) honeycomb of arch brick
5	1569+500	P-N5N-2590	Prestressed Concrete Girder	100.286m 4 spans	(1) exposed reinforcing bar at curb (2) railing
6	1599+000	P-N5N-2640	Prestressed Concrete Girder	152.626m 5 spans	(1) exposed reinforcing bar at slab (2) scouring



Appendix 3

MINUTES OF MEETINGS
BETWEEN
THE JAPANESE SECOND DETAILED PLANNING SURVEY TEAM
AND
THE AUTHORITIES CONCERNED OF
THE GOVERNMENT OF ISLAMIC REPUBLIC OF PAKISTAN
ON
THE PROJECT FOR TECHNICAL ASSISTANCE ON
IMPLEMENTATION OF BRIDGE MANAGEMENT SYSTEM IN NHA

Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Second Detailed Planning Survey Team (hereinafter referred to as "the Team") headed by Dr. Nobuyuki Tsuneoka to Islamic Republic of Pakistan (hereinafter referred to as "Pakistan") from 3rd July, 2012 to 18th July, 2012, for the purpose of considering the details on "the Project for Technical Assistance on Implementation of Bridge Management System in NHA" (hereinafter referred to as "the Project"). The Team held a series of discussions with National Highway Authority (hereinafter referred to as "NHA") and the authorities concerned. As a result of the discussions, the Team, NHA and the authorities concerned agreed upon the matters referred to in the document attached hereto.

Islamabad, 18th July, 2012

Nobuyuki Tsuneoka
Leader
Japan International Cooperation Agency
Japan

Mujeeb Qadir
Member (Operations)
National Highway Authority
Islamic Republic of Pakistan

WITNESSED BY

Sajjad Ahmad Shaikh
Joint Secretary
Economic Affairs Division
Ministry of Economic Affairs and Statistics
Islamic Republic of Pakistan

(SYED ZAIN GILLANI)
Deputy Secretary
Economic Affairs Division
Government of Pakistan
Islamabad

Hameed Akhtar
Director (Roads)
Ministry of Communications
Islamic Republic of Pakistan

ATTACHED DOCUMENT

I. TITLE OF THE PROJECT

Both the Japanese and the Pakistani sides agreed that the title of the Project was changed from that was referred in the Minutes of Meetings (Annex 1), signed on 18th May, 2012 as a result of the First Detailed Planning Survey, as follows:

(Before) The Project for Technical Assistance on the Implementation of Road Asset Management System in NHA, Pakistan

(After) The Project for Technical Assistance on Implementation of Bridge Management System in NHA

II. PC-I

According to the official appraisal procedure of the Government of Pakistan for foreign aid projects, PC-I of the Project will be prepared and forwarded by NHA to the Planning Commission by the end of September 2012. JICA will inform the Project cost to NHA by the end of August 2012. NHA will facilitate with Planning Commission the smooth approval of PC-I by Central Development Working Party (hereinafter referred as to "CDWP") of Pakistan.

III. RECORD OF DISCUSSIONS

Both sides agreed that the Record of Discussions (hereinafter referred to as "R/D"), the draft of which is attached hereto, will determine the framework of the Project. After the official approval of PC-I of the Project by CDWP of Pakistan and the staffing of two (2) personnel by NHA at the newly-created posts named Deputy Director (BMS) and Assistant Director (BMS) in the section of Road Asset Management System in NHA, who will be Project Coordinator and Assistant Project Coordinator of the Project, R/D will be forwarded by JICA to the authorities concerned of the Pakistani side for signing, which is the necessary process for the commencement of the Project.

IV. LOCATION OF MASTER TRAINERS' TRAININGS

Both sides agreed the implementation of master trainers' trainings for the staff of NHA's Headquarters and Regional Offices (Activity 2-1) only in or around Islamabad.

ANNEX 1 Minutes of Meetings signed on 18th May, 2012
ANNEX 2 Draft Record of Discussions

ANNEX 1.

MINUTES OF MEETINGS OF DETAILED PLANNING SURVEY ON THE PROJECT FOR TECHNICAL ASSISTANCE ON THE IMPLEMENTATION OF ROAD ASSET MANAGEMENT SYSTEM IN NHA, PAKISTAN

Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched a detailed planning survey team (hereinafter referred to as "the Team") on the captioned project (hereinafter referred to as "the Project"), comprising of Dr. Nobuyuki Tsuneoka, Senior Advisor for Traffic and Transportation, and Ms. Aya Shimada, Deputy Assistant Director of Economic Infrastructure Department from JICA Headquarters in Tokyo, Japan to Islamabad, Pakistan from May 14th to 18th, 2012 In order to hold prior discussions on the contents of the proposed Project and conditions of its commencement. The Team would like to express their gratitude to the officials of National Highway Authority of Pakistan (hereinafter referred to as "NHA") who spent their time to discuss issues with the Team and shared various information and available data.

The Team would like to leave with NHA the main points of the discussions and the way forward as follows.

1. **Main points discussed:**

- In response to the request from Government of Islamic Republic of Pakistan (hereinafter referred to as "GOP") to assist the implementation of road asset management system in NHA (training/equipment), NHA and the Team agreed that capacity development of bridge maintenance staff of NHA's headquarters and NHA's staff of regional offices as well as development of bridge management system (BMS) may be the focal components of the Project.
- Responding to the Team's questions on possible counterpart personnel, NHA explained the well-established organizational structure of its headquarters and regional offices including maintenance units, and their human resources responsible for road and bridge maintenance, which ensured that NHA shall assign competent personnel as counterparts.
- NHA also ensured that,if the Project is implemented, they will secure necessary budget for road maintenance including bridge maintenance which will be used for repair and rehabilitation of bridges.
- The Team pointed out that there are two types of bridge data collections, one is for BMS and the other is for the periodical inspection conducted by the maintenance units of regional offices. The purposes of these two data collections are different, hence different data formats are applied. The Team visited one regional office and two maintenance

units and recognized that such situation causes inefficient process in bridge maintenance work and leads to inappropriate database development for bridge maintenance.

- Both sides understood that capacity development of maintenance units and development of a computerized database for periodical inspection would be desirable.

2. Way forward:

- The Team informed NHA that they will report their findings during the survey to JICA headquarters and that JICA headquarters in consultation with JICA Pakistan Office will consider the appropriateness of the Project implementation.
- When the project implementation is determined appropriate, JICA may dispatch the second detailed planning survey team for the Project in due course.
- JICA requested NHA to share "Expenditure Summary of Maintenance Activities (FY2011-2012)". NHA assured to submit it to the JICA headquarters through JICA Pakistan Office by the end of July.

May 18, 2012

Muhammad Bashir
General Manager (Operation)
National Highway Authority, Pakistan

Nobuyuki Tsuneoka
Leader of the Team
Japan International Cooperation Agency

(DRAFT)

ANNEX 2

RECORD OF DISCUSSIONS

ON

THE PROJECT FOR TECHNICAL ASSISTANCE ON IMPLEMENTATION OF BRIDGE MANAGEMENT SYSTEM IN NHA

IN

ISLAMIC REPUBLIC OF PAKISTAN

AGREED UPON BETWEEN

THE AUTHORITIES CONCERNED OF THE ISLAMIC REPUBLIC OF PAKISTAN

AND

JAPAN INTERNATIONAL COOPERATION AGENCY

Islamabad, day/month, 2012

Takatoshi Nishikata
Chief Representative
Pakistan Office
Japan International Cooperation Agency
Japan

Mujeeb Qadir
Member (Operations)
National Highway Authority
Islamic Republic of Pakistan

WITNESSED BY

Sajjad Ahmad Shaikh
Joint Secretary
Economic Affairs Division
Ministry of Economic Affairs and Statistics
Islamic Republic of Pakistan

Hameed Akhtar
Director (Roads)
Ministry of Communications
Islamic Republic of Pakistan

(DRAFT)

Based on the minutes of meetings on the Second Detailed Planning Survey on the Project for Technical Assistance on Implementation of Bridge Management System in NHA (hereinafter referred to as "the Project") signed on 18th July, 2012 between the authorities concerned of Islamic Republic of Pakistan (hereinafter referred to as "Pakistan") represented by National Highway Authority (hereinafter referred to as "NHA") and Japan International Cooperation Agency (hereinafter referred to as "JICA"), and the PC-I approved on ___ by Central Development Working Party of Pakistan, both parties agreed the details of the Project and the main points discussed as described in the Appendix 1 and the Appendix 2 respectively.

Both parties also agreed that NHA, the counterpart to JICA, will be responsible for the implementation of the Project in cooperation with JICA, coordinate with other relevant organizations and ensure that the self-reliant operation of the Project is sustained during and after the implementation period in order to contribute toward social and economic development of Pakistan.

In addition, both parties confirmed the sincere cooperation with each other with a view to contributing toward smooth implementation and enhancing development effect of the following five (5) Japanese ODA Loan Projects by achieving the purpose of the Project.

1) Indus Highway Construction Project signed on 30th March, 1989
2) Indus Highway Construction Project (II) signed on 14th January, 1991
3) Indus Highway Construction Project (IIB) signed on 19th August, 1993
4) Indus Highway Construction Project (III) signed on 15th December, 2006
5) East-West Road Improvement Project (N-70) (I) signed on 3rd May, 2008

The Project will be implemented within the framework of the Agreement on Technical Cooperation signed on 30th April, 2005 and the Note Verbales to be exchanged between the Government of Japan (hereinafter referred to as "GOJ") and the Government of Pakistan (hereinafter referred to as "GOP").

Appendix 1: Project Description
Appendix 2: Main Points Discussed

(DRAFT)

Appendix 1

PROJECT DESCRIPTION

I. BACKGROUND

Pakistan has the road network of about 260,000km, accounting 92% of domestic passenger traffic and 96% of freight traffic. Approximately 80% of road users in Pakistan rely on the national highways. NHA is responsible for the operation and management of national highway network totaling 12,131km, which is 4.7% of the overall road network of Pakistan, including about 5,000 bridges and 16,000 culverts.

Regarding road pavement maintenance, Highway Development and Management Model 4 (abbreviated as "HDM4") was introduced to NHA in 2003. In addition, Road Asset Management System (hereinafter referred to as "RAMS") was developed as a part of the World Bank's Highway Rehabilitation Project from February 2005 to March 2008. Road pavement maintenance has been implemented by NHA through the utilization of RAMS and HDM4.

Meanwhile, bridges and culverts maintenance has been done without any plans. Therefore, repair or replacement of bridges and culverts are usually taken place only after recognizing serious damages or heavy defects. In this way, proper maintenance of bridges and culverts based on their periodical inspection has not been established despite the high risk of damages and degradation caused by traffic volume increase, over-loading, poor design/construction and so on.

The reasons for this poor bridge maintenance are as follows: firstly, Bridge Management System (hereinafter referred to as "BMS") introduced as a component of RAMS does not function very well in bridge maintenance works of NHA. Secondly, NHA faces the shortage of bridge maintenance budget, which is approximately 4% of the annual road maintenance budget. Thirdly, NHA experiences lack of trained engineers and bridge inspection equipment.

In order to improve the situation, GOP requested GOJ to implement the Project for NHA to utilize BMS more effectively. In response to this request, JICA dispatched the First and the Second Detailed Planning Survey to discuss the contents of the Project with NHA and other authorities concerned of Pakistan. Based on the agreements between JICA and the authorities concerned of Pakistan, the minutes of meetings was signed on 18th July, 2012 and the PC-I was approved on ___, which leads both parties to conclude the record of discussions.

II. OUTLINE OF THE PROJECT

1. Details of the Project

Details of the Project are described in the Logical Framework (Project Design

Matrix: PDM) (Annex 1) and the tentative Plan of Operation (Annex 2).

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

(1) NHA
[Administrative personnel]
(a) Project Director: Member (Operations)
(b) Project Manager: Director (RAMS)
Project Director and Project Manager will be responsible for overall administration and implementation of the Project.
[Counterpart personnel]
(c) Project Coordinator: Deputy Director (BMS)
(d) Assistant Project Coordinator: Assistant Director (BMS)
Project Coordinator and Assistant Project Coordinator will be responsible for overall coordination for the implementation of the Project.

(2) JICA Experts
The JICA experts will give necessary technical guidance, advice and recommendations to NHA on any matters pertaining to the implementation of the Project.

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

3. Project Sites and Beneficiaries
The main activities of the Project will be implemented at NHA's Headquarters, 13 Regional Offices and 36 Maintenance Units.

The beneficiaries of the Project will be the staff of NHA's Headquarters, 13 Regional Offices and 36 Maintenance Units.

4. Duration
The duration of the Project will be two (2) years and six (6) months. The tentative Plan of Operation is shown in Annex 2.

5. Reports
NHA and JICA experts will jointly prepare the following reports in English.
(1) Progress Report on semiannual basis until the project completion.
(2) Project Completion Report at the time of completion.

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

III. UNDERTAKINGS OF NHA AND GOP

NHA and GOP will take necessary measures to:

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

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

Other privileges, exemptions and benefits will be provided in accordance with the Agreement of Technical Cooperation signed on 30th April, 2005 between GOJ and GOP shown in Annex 5.

IV. EVALUATION

JICA and NHA will jointly conduct the terminal evaluation upon completion.

V. PROMOTION OF PUBLIC SUPPORT

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

VI. MUTUAL CONSULTATION

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

VII. AMENDMENTS

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

The minutes of meetings will be signed by authorized persons of each side who

may be different from the signers of the record of discussions.

Annex 1 Logical Framework (Project Design Matrix: PDM)
Annex 2 Tentative Plan of Operation
Annex 3 Project Organization Chart
Annex 4 A List of Proposed Members of Joint Coordination Committee
Annex 5 Agreement of Technical Cooperation

LOGICAL FRAMEWORK (PROJECT DESIGN MATRIX: PDM)

PROJECT TITLE: Project for Technical Assistance on Implementation of Bridge Management System in NHA
PROJECT PERIOD: 2 years & 6 months
VERSION NO.: 0
TARGET AREA: Bridges on National Highways in Pakistan
TARGET GROUP: NHA's Headquarters, Regional Offices, Maintenance Units
AS OF: July 18, 2012

NARRATIVE SUMMARY	INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
OVERALL GOAL			
Bridge maintenance status improved on the bridges of National Highways in Pakistan.	Average bridge damage value, calculated by the existing BMS (Smart Bridge), decreased by O% in (month, year) from the start of the Project.	Output data of the existing BMS	
PROJECT PURPOSE			
Cost estimate necessary for bridge maintenance every fiscal year implemented on the basis of bridge inspection results of the bridges on National Highways in Pakistan.	Bridge maintenance budget document with breakdowns prepared in [month, year].	Analysis on each of input data to the existing BMS (Smart Bridge) and bridge maintenance budget document (with breakdowns)	•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.
OUTPUTS			
1 Manuals and a database developed for bridge inspection and bridge repair method selection.	1 3 types of draft manuals (for 1) bridge inspection, 2) data input to a bridge inspection database, and 3) bridge repair method selection) developed by [month, year].	1 3 types of draft manuals	•The existing BMS (Smart Bridge) is continuously in use by NHA for cost estimate of bridge maintenance.
	2 A draft bridge inspection format developed by [month, year].	2 A draft bridge inspection format	
	3 A manual for culvert inspection and a culvert inspection format developed by [month, year].	3 A manual for culvert inspection and a culvert inspection format	
	4 A draft bridge inspection database developed by [month, year].	4 A draft bridge inspection database	
	5 2 types of draft training materials for the master trainers of NHA's HQ and ROs (for 1) bridge inspection and 2) bridge repair method selection) developed by [month, year].	5 2 types of draft training materials	
	6 Manuals (1), a bridge inspection format (2), a database (4) and training materials (5) finalized by [month, year].	6 3 types of manuals, a bridge inspection format, a database and 2 types of training materials	
2 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.	1 3 types of master trainers' trainings (for 1) bridge inspection, 2) bridge repair method selection, and 3) data input to a bridge inspection database) implemented by [month, year].	1 Training records and reports	
	2 3 types of trainings (for 1) bridge inspection, 2) bridge repair method selection, and 3) data input to a bridge inspection database) implemented by the master trainers (trained in ACTIVITY 2-1) at all the 36 MUs by [month, year].	2 Training records and reports	
	3 Bridge inspection, bridge repair method selection, and data input to a bridge inspection database completed at all the 36 MUs by [month, year].	3 Completed bridge inspection formats and input data to a bridge inspection database	
	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 HQ & JICA Experts by [month, year].	4 Input data to a bridge inspection database and its evaluation	
	5 O% or more master trainers of NHA's HQ and ROs scored at the capacity test after the trainings O% or more higher than that before the trainings.	5 Test records and reports	
3 Data on all the bridges of National Highways in Pakistan input by MUs to the existing BMS (Smart Bridge) available to NHA's HQ.	1 A training for management of the existing BMS (Smart Bridge) implemented by [month, year].	1 Training records and reports	
	2 Data on all the bridges of National Highways in Pakistan input to the existing BMS (Smart Bridge) by [month, year].	2 Input data to the existing BMS (Smart Bridge)	
	3 Cost estimate necessary for bridge maintenance in the fiscal year of ● based on the data input to the existing BMS (Smart Bridge).	3 Bridge maintenance budget document with breakdowns	
ACTIVITIES	**INPUTS**		
(1 DEVELOPMENT OF MANUALS & DATABASE)	**INPUTS FROM THE JAPANESE SIDE**	**INPUTS FROM THE PAKISTANI SIDE**	•NHA staff, the participants in the trainings (ACTIVITY 2-1 and 2-2), do not retire from NHA.
1-1 Develop 3 types of draft manuals (for 1) bridge inspection, 2) data input to a bridge inspection database, and 3) bridge repair method selection).	1 EXPERTS 1) Bridge Inspection Expert 2) Bridge Repair Expert 3) BMS Expert 4) Capacity Development Expert 5) Local Coordinator (Pakistani)	1 PERSONNEL ADMINISTRATIVE PERSONNEL 1) Project Director: Member (Operations) 2) Project Manager: Director (RAMS) COUNTERPART PERSONNEL 1) Project Coordinator: Deputy Director (BMS) 2) Assistant Project Coordinator: Assistant Director (BMS)	
1-2 Develop a draft bridge inspection format.			
1-3 Develop a manual for culvert inspection and a culvert inspection format.			
1-4 Develop a draft bridge inspection database (in Excel/Access).			
1-5 Develop 2 types of draft training materials for the master trainers of NHA's HQ and ROs (for 1) bridge inspection and 2) bridge repair method selection).	2 EQUIPMENT •Non-destructive testing equipment such as -Ground Penetrating Radar -Electrochemical Polarization Corrosion Measurement and •Measurement by Sonic Testing •Schmidt Hammer -Carbonation Depth Measurement •Crack Scale •Test Hammer	2 OFFICE & FACILITIES •Office for JICA Experts in NHA's HQ Building with office furniture, internet and telephone.	
1-6 Review and finalize the above 3 types of manuals (ACTIVITY 1-1), a format (ACTIVITY 1-2), a database (ACTIVITY 1-4) and 2 types of training materials (ACTIVITY 1-5).		3 ARRANGEMENT •Arrangements for master trainers' trainings and the trainings at all the 36 •Transportation for the field trips of JICA Experts in/around Islamabad.	
(2 IMPLEMENTATION OF TRAININGS)	(Inputs other than indicated here will be determined through mutual consultations between JICA and NHA during the implementation of the Project, as necessary.)	4 BUDGET ALLOCATION •Budget for salary of personnel (1) •Budget for travel expenses and allowances for the participants of master trainers' trainings and the trainings at all the 36 MUs.	
2-1 Implement 3 types of master trainers' trainings for the staff of NHA's HQ and ROs at the target bridges in/around Islamabad (for 1) bridge inspection, 2) bridge repair method selection, and 3) data input to a bridge inspection database).			
2-2 By master trainers (trained in ACTIVITY 2-1), implement 3 types of trainings for the staff of MUs (for 1) bridge inspection, 2) bridge repair method selection, and 3) data input to a bridge inspection database).			
2-3 By the staff of MUs (trained in ACTIVITY 2-2), implement 1) bridge inspection, 2) bridge repair method selection, and 3) data input to a bridge inspection database for all the bridges under the jurisdiction of NHA.			
(3 COST ESTIMATE)			**PRECONDITIONS**
3-1 Implement a training for the staff of NHA's HQ for management of the existing BMS (Smart Bridge).			•Pakistan, especially Islamabad, is continuously safe enough for JICA Experts to implement the activities.
3-2 Transfer the data from a bridge inspection database input by the staff of MUs to the existing BMS (Smart Bridge).			
3-3 Estimate the cost necessary for bridge maintenance in the fiscal year of ● based on the data transferred to the existing BMS (Smart Bridge) in ACTIVITY 3-2.			

HQ: Headquarters
RO: Regional Office
MU: Maintenance Unit

(DRAFT)

TENTATIVE PLAN OF OPERATION

PROJECT TITLE: Project for Technical Assistance on Implementation of Bridge Management System in NHA

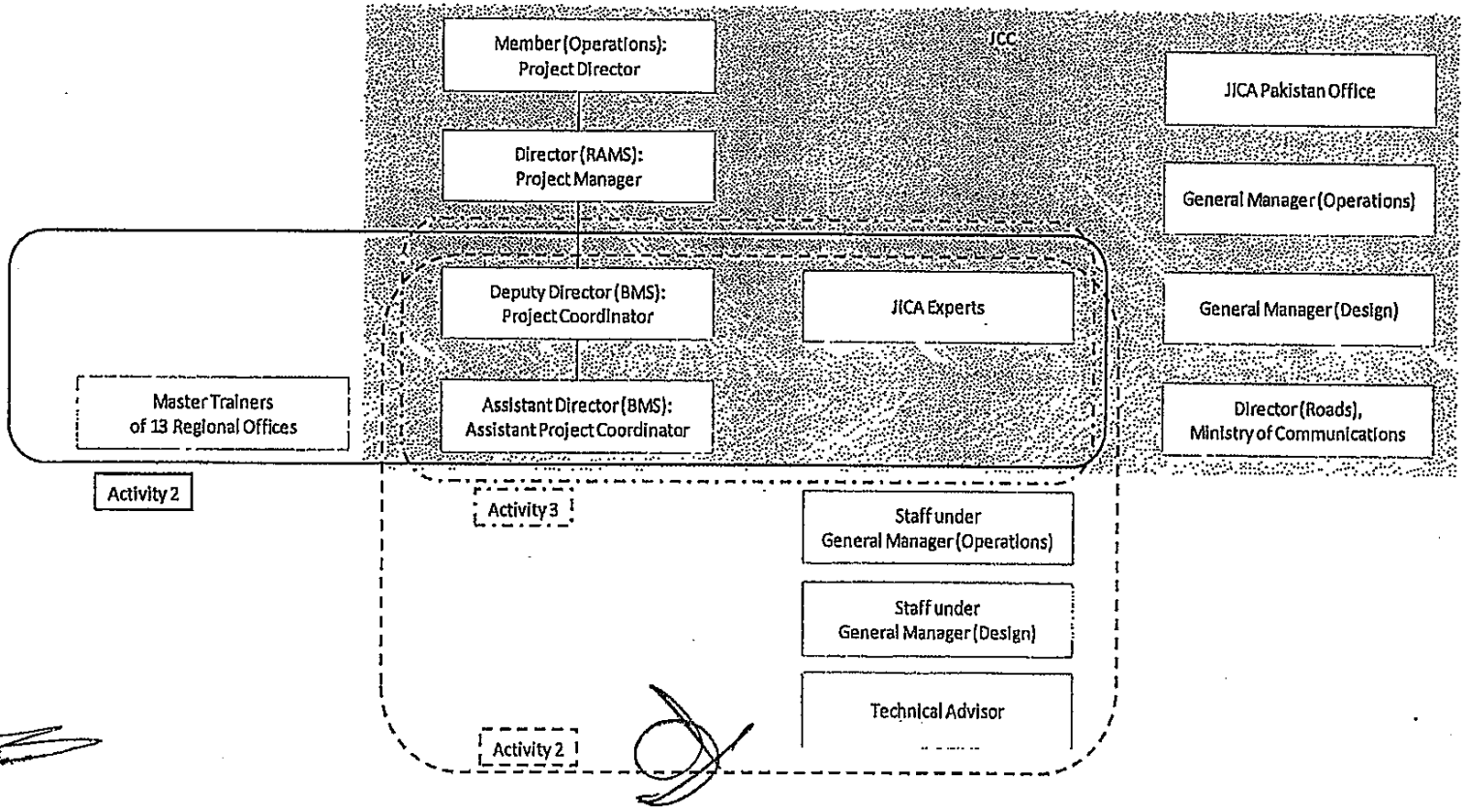
VERSION NO.: 0
AS OF: July 18, 2017

No.	ACTIVITIES	1st Responsible	2nd Responsible
0-1	Analyze the issues to be improved in the current bridge and culvert maintenance by NHA.	NHA (HQ)	JICA Experts
0-2	Study the current bridge and culvert inspection implemented by the staff of MUs on daily basis and regular basis (once a half-year).	NHA (HQ)	JICA Experts
0-3	Study the existing bridge and culvert inspection format (in NHA Code 2005).	NHA (HQ)	JICA Experts
0-4	Study the system of and data input to the existing BMS (Smart Bridge).	NHA (HQ)	JICA Experts
OUTPUT 1: [illegible]			
1-1	Develop 3 types of draft manuals (for 1) bridge inspection, 2) data input to a bridge inspection database, and 3) bridge repair method selection).		
1-1-1	Draft a manual for bridge inspection based on the findings of ACTIVITY 0-1 & 0-2.	NHA (HQ)	JICA Experts
1-1-2	Draft a manual for data input to a bridge inspection database referring to the draft database developed in ACTIVITY 1-4.	NHA (HQ)	JICA Experts
1-1-3	Draft a manual for bridge repair method selection based on the findings of ACTIVITY 0-1 & 0-4.	NHA (HQ)	JICA Experts
1-2	Develop a draft bridge inspection format (based on the findings of ACTIVITY 0-1, 0-2, 0-3 & 0-4).	NHA (HQ)	JICA Experts
1-3	Develop a manual for culvert inspection and a culvert inspection format.		
1-3-1	Draft a manual for culvert inspection based on the findings of ACTIVITY 0-1 & 0-2.	NHA (HQ)	JICA Experts
1-3-2	Draft a culvert inspection format based on the findings of ACTIVITY 0-1, 0-2 & 0-3.	NHA (HQ)	JICA Experts
1-4	Develop a draft bridge inspection database (in Excel/Access).		
1-4-1	Study the current IT environment of 12 ROs and 36 MUs including the number of PCs deployed and the condition of Internet connection.	NHA (HQ)	JICA Experts
1-4-2	Consider the specification of a bridge inspection database (ex. Excel/Access).	NHA (HQ)	JICA Experts
1-4-3	Develop a draft bridge inspection database.	NHA (HQ)	JICA Experts
1-5	Develop 2 types of draft training materials for the master trainers of NHA's HQ and ROs (for 1) bridge inspection and 2) bridge repair method selection) (referring to the outputs of ACTIVITY 2-1-4 & 2-1-5).	JICA Experts	NHA (HQ)
1-6	Review and finalize the above 3 types of manuals (ACTIVITY 1-1), a format (ACTIVITY 1-2), a database (ACTIVITY 1-4) and 2 types of training materials (ACTIVITY 1-5).		
1-6-1	Review the lessons learned from ACTIVITY 2-1, 2-2 & 2-3.	NHA (HQ)	JICA Experts
1-6-2	Finalize the manuals, a format, a database and training materials referring to the lessons reviewed in ACTIVITY 1-6-1.	NHA (HQ)	JICA Experts
OUTPUT 2: [illegible] THE BRIDGES ON NATIONAL HIGHWAYS IN PAKISTAN [illegible]			
2-1	Implement 3 types of master trainers' trainings for the staff of NHA's HQ and ROs at the target bridges in/around Islamabad (for 1) bridge inspection, 2) bridge repair method selection, and 3) data input to a bridge inspection database).		
2-1-1	Set up a criteria for selection of participants in master trainers' trainings.	JICA Experts	NHA (HQ)
2-1-2	Decide the target bridges of master trainers' trainings (about 5 bridges in/around Islamabad).	JICA Experts	NHA (HQ)
2-1-3	Decide the participants in master trainers' trainings (2/3 from NHA's HQ and 1 from each of 13 ROs).	JICA Experts	NHA (HQ)
2-1-4	Prepare the contents and syllabus of master trainers' trainings.	JICA Experts	NHA (HQ)
2-1-5	Carry out a capacity test for the participants of master trainers' trainings (as baseline data).	JICA Experts	NHA (HQ)
2-1-6	Implement 3 types of master trainers' trainings (for 1) bridge inspection, 2) bridge repair method selection, and 3) data input to a bridge inspection database).	JICA Experts	NHA (HQ)
2-1-7	Carry out a capacity test for the participants of master trainers' trainings (as output data).	JICA Experts	NHA (HQ)
2-1-8	Grant a certificate to those participants scored O% or higher at the capacity test (ACTIVITY 2-1-7).	JICA Experts	NHA (HQ)
2-2	By master trainers (trained in ACTIVITY 2-1), implement 3 types of trainings for the staff of MUs (for 1) bridge inspection, 2) bridge repair method selection, and 3) data input to a bridge inspection database).		
2-2-1	Set up a criteria and minimum requirement of participants from MUs in trainings by master trainers of ROs.	NHA (HQ)	JICA Experts
2-2-2	Prepare schedule for a training at each of 13 ROs and OJT trainings at each of 36 MUs.	NHA (RO)	NHA (HQ)
2-2-3	Decide the participants in a training at each of 13 ROs.	NHA (RO)	NHA (HQ)
2-2-4	Decide the target bridges of OJT trainings at each of 36 MUs.	NHA (RO)	NHA (HQ)
2-2-5	By master trainers, implement 3 types of trainings for the staff of MUs (for 1) bridge inspection, 2) bridge repair method selection, and 3) data input to a bridge inspection database).	NHA (RO)	NHA (HQ)
2-2-6	By master trainers of NHA's HQ and JICA Experts (only if no security concerns), monitor the trainings by master trainers of ROs.	NHA (HQ)	JICA Experts
2-3	By the staff of MUs (trained in ACTIVITY 2-2), implement 1) bridge inspection, 2) bridge repair method selection, and 3) data input to a bridge inspection database for all the bridges under the jurisdiction of NHA.		
2-3-1	Prepare schedule for 1) bridge inspection, 2) brige repair method selection, and 3) data input to a bridge inspection database at each of 36 MUs.	NHA (MU)	NHA (HQ&RO)
2-3-2	By the staff of MUs, implement 1) bridge inspection, 2) bridge repair method selection, and 3) data input to a bridge inspection database for all the bridges of each of 36 MUs.	NHA (MU)	NHA (HQ&RO)
2-3-3	By master trainers of NHA's HQ and JICA experts (only if no security concerns), monitor the 1) bridge inspection, 2) bridge repair method selection, and 3) data input to a bridge inspection database by the staff of MUs.	NHA (HQ)	JICA Experts
2-3-4	By master trainers of ROs, confirm all the bridges of each MU have been inspected and their data input to a bridge inspection database.	NHA (RO)	NHA (HQ)
2-3-5	By master trainers of NHA's HQ and JICA Experts, evaluate the accuracy of 1) bridge inspection, 2) bridge repair method selection, and 3) data input to a bridge inspection database by the staff of MUs.	NHA (HQ)	JICA Experts
OUTPUT 3: [illegible] THE EXISTING BMS (SMART BRIDGE) [illegible]			
3-1	Implement a training for the staff of NHA's HQ for management of the existing BMS (Smart Bridge).		
3-1-1	Prepare the contents and syllabus of a training for the staff of NHA's HQ for management of the existing BMS (Smart Bridge).	JICA Experts	NHA (HQ)
3-1-2	Implement a training for the staff of NHA's HQ for management of the existing BMS (Smart Bridge).	JICA Experts	NHA (HQ)
3-2	Transfer the data from a bridge inspection database input by the staff of MUs to the existing BMS (Smart Bridge).		
3-2-1	Trial of transferring the sample data from a bridge inspection database input by the staff of MUs to the existing BMS (Smart Bridge).	NHA (HQ)	JICA Experts
3-2-2	Transfer all the data from a bridge inspection database input by the staff of MUs to the existing BMS (Smart Bridge).	NHA (HQ)	JICA Experts
3-3	Estimate the cost necessary for bridge maintenance in the fiscal year of [illegible] based on the data transferred to the existing BMS (Smart Bridge) in ACTIVITY 3-2.	NHA (HQ)	JICA Experts
[illegible] ACTIVITIES			
	Joint Coordination Committee		
	Progress Report		
	Final Report		
	Mid-Term Progress Review		
	Terminal Evaluation		

HQ: Headqurataers
RO: Regional Office
MU: Maintenance Unit

Annex 3

PROJECT ORGANIZATION CHART



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Annex 4

LIST OF PROPOSED MEMBERS OF JOINT COORDINATION COMMITTEE

[JAPANESE SIDE]

1) JICA Pakistan Office
   - Representative / Program Officer in charge of the Project

2) JICA Experts
   - Bridge Inspection Expert
   - Bridge Repair Expert
   - BMS Expert
   - Capacity Development Expert
   - Local Coordinator (Pakistani)

[PAKISTANI SIDE]

- Member (Operations), NHA: *Project Director*
- General Manager (Operations), NHA
- General Manager (Design), NHA
- Director (Roads), Ministry of Communications
- Director (RAMS), NHA: *Project Manager*
- Deputy Director (BMS), NHA: *Project Coordinator*
- Assistant Director (BMS), NHA: *Assistant Project Coordinator*

Chairman of JCC will be Member (Operations) of NHA as Project Director.

JCC may invite experts from outside NHA (e.g. academia) as technical advisors, if deemed necessary.

JCC will be scheduled based on the maximum availability of the members listed above.

Annex 5

AGREEMENT ON TECHNICAL COOPERATION BETWEEN THE GOVERNMENT OF THE ISLAMIC REPUBLIC OF PAKISTAN AND THE GOVERNMENT OF JAPAN

The Government of the Islamic Republic of Pakistan and the Government of Japan,

Desiring to strengthen further the friendly relations existing between the two countries through the promotion of technical cooperation, and

Considering mutual benefits derived from promoting the economic and social development of their respective countries,

Have agreed as follows:

Article I

The two Governments (hereinafter referred to as "the Parties") shall endeavor to promote technical cooperation between the two countries.

Article II

Separate arrangements which govern specific technical cooperation programs carried out under this Agreement shall be agreed upon between the competent authorities of the Parties. The competent authority of the Government of the Islamic Republic of Pakistan is the Ministry of Economic Affairs and Statistics (Economic Affairs Division), and the competent authority of the Government of Japan is the Ministry of Foreign Affairs.

Article III

The following forms of technical cooperation will be carried out by the Japan International Cooperation Agency (hereinafter referred to as "JICA") at its own expense in accordance with the laws and regulations in force in Japan as well as with the arrangements referred to in Article II:

(a) Providing technical training to Pakistani nationals;

(b) dispatching experts (hereinafter referred to as the "Experts") to the Islamic Republic of Pakistan;

(c) dispatching Japanese volunteers with a wide range of technical skills and abundant experience (hereinafter referred to as the "Senior Volunteers") to the Islamic Republic of Pakistan;

(d) dispatching Japanese missions (hereinafter referred to as the "Missions") to the Islamic Republic of Pakistan to conduct surveys of economic and social development projects of the Islamic Republic of Pakistan;

(e) providing the Government of the Islamic Republic of Pakistan with equipment, machinery and materials; and

(f) providing the Government of the Islamic Republic of Pakistan with other forms of technical cooperation as may be decided upon by mutual consent between the Parties.

Article IV

The Government of the Islamic Republic of Pakistan shall ensure that the techniques and knowledge acquired by Pakistani nationals as well as the equipment, machinery and materials provided as a result of the Japanese technical cooperation as set forth in Article III contribute to the economic and social development of the Islamic Republic of Pakistan, and are not utilized for military purposes.

Article V

In case JICA dispatches the Experts, the Senior Volunteers and the Missions, the Government of the Islamic Republic of Pakistan shall:

1. (1) (a) exempt the Experts, the Senior Volunteers and members of the Missions from taxes including income tax, and fiscal charges imposed on or in connection with salaries and any allowances remitted to them from abroad ;

(b) exempt the Experts, the Senior Volunteers, members of the Missions and their families from taxes including customs duties and fiscal charges in respect of the importation of:

(i) personal effects, household effects and consumer goods; and

(ii) one motor vehicle per Expert and per Senior Volunteer assigned to stay in the Islamic Republic of Pakistan;

(c) exempt the Experts and the Senior Volunteers who do not import any motor vehicle into the Islamic Republic of Pakistan from taxes including all indirect taxes and fiscal charges in respect of the local purchase of one motor vehicle per Expert and per Senior Volunteer; and

(d) exempt the Experts and the Senior Volunteers from the registration fee of the motor vehicles mentioned in (b)(ii) and (c).

(2) (a) provide, at its own expense, suitable office and other facilities including telephone and facsimile services necessary for the performance of the duties by the Experts, the Senior Volunteers and the Missions as well as to bear the expenses for their operation and maintenance;

(b) provide, at its own expense, the local staff (including adequate interpreters, if necessary) as well as Pakistani counterparts to the Experts, the Senior Volunteers and the Missions necessary for the performance of their duties;

(c) bear expenses of the Experts and the Senior Volunteers for:

(i) daily transportation to and from their place of work;

(ii) their official travels within the Islamic Republic of Pakistan whenever local conditions and financial possibilities of authorities concerned of the Government of the Islamic Republic of Pakistan may permit; and

(iii) their official correspondence;

(d) provide the assistance for the acquisition of appropriate housing accommodation for the Experts, the Senior Volunteers and their families; and

(e) provide the assistance for receiving medical care and facilities for the Experts, the Senior Volunteers, members of the Missions and their families.

(3) (a) permit the Experts, the Senior Volunteers, members of the Missions and their families to enter, leave and sojourn in the Islamic Republic of Pakistan for the duration of their assignment therein, offer them the assistance for completing the procedures of alien registration requirements, and exempt them from consular fees;

(b) issue identification cards to the Experts, the Senior Volunteers and members of the Missions to secure the cooperation of all governmental organizations necessary for the performance of their duties;

(c) offer the Experts, the Senior Volunteers and their families the assistance for the acquisition of car driving license; and

(d) carry out other measures necessary for the performance of the duties by the Experts, the Senior Volunteers and the Missions.

2. The motor vehicles mentioned in paragraph 1 shall be subject to payment of taxes including customs duties if they are subsequently sold or transferred within the Islamic Republic of Pakistan to individuals or organizations not entitled to exemption from such taxes or similar privileges.

3. The Government of the Islamic Republic of Pakistan shall accord the Experts, the Senior Volunteers, members of the Missions and their families such privileges, exemptions and benefits as are no less favorable than those accorded to experts, senior volunteers, members of missions and their families of any third country or of any international organization performing a similar mission in the Islamic Republic of Pakistan.

Article VI

The Government of the Islamic Republic of Pakistan shall bear claims, if any arises, against the Experts, the Senior Volunteers and members of the Missions resulting from, occurring in the course of, or otherwise connected with, the performance of their duties, except when the Parties agree that such claims arise from gross negligence or willful misconduct on the part of the Experts, the Senior Volunteers or members of the Missions.

Article VII

1. (1) In case JICA provides the Government of the Islamic Republic of Pakistan with equipment, machinery and materials, the Government of the Islamic Republic of Pakistan shall exempt such equipment, machinery and materials from taxes including customs duties and fiscal charges in respect of the importation. The equipment, machinery and materials mentioned above shall become the property of the Government of the Islamic Republic of Pakistan upon being delivered c.i.f. at the port of the disembarkation to competent authorities of the Government of the Islamic Republic of Pakistan.

(2)In case JICA provides the Government of the Islamic Republic of Pakistan with equipment, machinery and materials, the Government of the Islamic Republic of Pakistan shall exempt such equipment, machinery and materials from taxes including all indirect taxes and fiscal charges in respect of the local purchase.

(3)The equipment, machinery and materials mentioned in sub-paragraph (1) and (2) shall be utilized for the purpose specified in the arrangements referred to in Article II unless otherwise agreed upon between the competent authorities of the Parties.

(4)The expenses for the transportation within the Islamic Republic of Pakistan of the equipment, machinery and materials mentioned in sub-paragraph (1) and (2) and the expenses for their replacement, maintenance and repair shall be borne by the Government of the Islamic Republic of Pakistan.

2. (1) The equipment, machinery and materials, prepared by JICA, necessary for the performance of the duties by the Experts, the Senior Volunteers and members of the Missions shall remain the property of JICA unless otherwise agreed upon between the competent authorities of the Parties.

(2) The Government of the Islamic Republic of Pakistan shall exempt the Experts, the Senior Volunteers and members of the Missions from taxes including customs duties and fiscal charges in respect of the importation of the equipment, machinery and materials mentioned in sub-paragraph (1).

(3) The Government of the Islamic Republic of Pakistan shall exempt the Experts, the Senior Volunteers and members of the Missions from taxes including all indirect taxes and fiscal charges in respect of the local purchase of the equipment, machinery and materials mentioned in sub-paragraph (1).

Article VIII

The Government of the Islamic Republic of Pakistan shall maintain close contact, through organizations designated by it, with the Experts, the Senior Volunteers and members of the Missions.

Article IX

1. It is confirmed that JICA may maintain its overseas office in the Islamic Republic of Pakistan(hereinafter referred to as the "Office") with a resident representative and his/her staff to be dispatched from Japan (hereinafter referred to as the "Representative" and the "Staff" respectively) who shall perform the duties to be assigned to them by JICA relative to the technical cooperation programs under this Agreement in the Islamic Republic of Pakistan.

2. The Government of the Islamic Republic of Pakistan shall:

(1)(a) exempt the Representative, the Staff and their families from taxes including income tax and fiscal charges imposed on or in connection with salaries and any allowances remitted to them from abroad;

(b) exempt the Representative, the Staff and their families from taxes including customs duties and fiscal charges in respect of the importation of:

(i) personal effects, household effects and consumer goods; and

(ii) one motor vehicle per Representative and per Staff assigned to stay in the Islamic Republic of Pakistan;

(c) exempt the Representative and the Staff who do not import any motor vehicle into the Islamic Republic of Pakistan from taxes including all indirect taxes and fiscal charges in respect of the local purchase of one motor vehicle per Representative and per Staff;

(d) exempt the Representative and the Staff from the registration fee of the motor vehicles mentioned in (b)(ii) and (c);

(e) permit the Representative, the Staff and their families to enter, leave and sojourn in the Islamic Republic of Pakistan for the duration of their assignment therein, offer them the assistance for completing the procedures of alien registration requirements, and exempt them from consular fees;

(f) issue identification cards and special passes to the Representative and the Staff to enter airport/seaport beyond passport control point to receive and send off the Experts, the Senior Volunteers and members of the Missions;

(g) offer the Representative, the Staff and their families the assistance for the acquisition of car driving license; and

(h) carry out other measures necessary for the performance of the duties by the Representative and the Staff.

(2)(a) exempt the Office from taxes including customs duties and fiscal charges in respect of the importation of the equipment, machinery, motor vehicles and materials necessary for activities of the Office;

(b) exempt the Office from taxes including all indirect taxes and fiscal charges in respect of the local purchase of the equipment, machinery, motor vehicles and materials necessary for the functions of the Office; and

(c) exempt the Office from taxes including income tax and fiscal charges imposed on or in connection with office expenses remitted from abroad.

3. The motor vehicles mentioned in paragraph 2 shall be subject to payment of taxes including customs duties if they are subsequently sold or transferred within the Islamic Republic of Pakistan to individuals or organizations not entitled to exemption from such taxes or similar privileges.

4. The Government of the Islamic Republic of Pakistan shall accord the Representative, the Staff and their families as well as the Office such privileges, exemptions and benefits as are no less favorable than those accorded to representatives, staff and their families as well as offices of any third country or of any international organization performing a similar mission in the Islamic Republic of Pakistan.

Article X

The Government of the Islamic Republic of Pakistan shall take necessary measures to ensure security of the Experts, the Senior Volunteers, members of the Missions, the Representative, the Staff and their families staying in the Islamic Republic of Pakistan.

Article XI

The Government of the Islamic Republic of Pakistan and the Government of Japan shall consult with each other in respect of any matter that may arise from or in connection with this Agreement.

Article XII

1. The provisions of this Agreement shall also apply, after the entering into force of this Agreement, to the specific technical cooperation programs which have commenced prior to the entering into force of this Agreement, and to the Experts, the Senior Volunteers, members of the Missions, the Representative, the Staff and their families staying in the Islamic Republic of Pakistan as well as to the equipment, machinery and materials related to the said programs.

2. The termination of this Agreement shall neither affect the specific technical cooperation programs being carried out until the date of the completion of the said programs, unless otherwise decided upon by mutual consent between the Parties, nor affect the privileges, exemptions and benefits accorded to the Experts, the Senior Volunteers, members of the Missions, the Representative, the Staff and their families staying in the Islamic Republic of Pakistan for the performance of their duties in connection with the said programs.

Article XIII

1.This Agreement shall enter into force on the date of the signature thereof.

2.This Agreement shall remain in force for a period of one year, and shall be automatically renewed every year for another period of one year each, unless either Government has given to the other Government at least six months' written advance notice of its intention to terminate this Agreement.

Article XIV

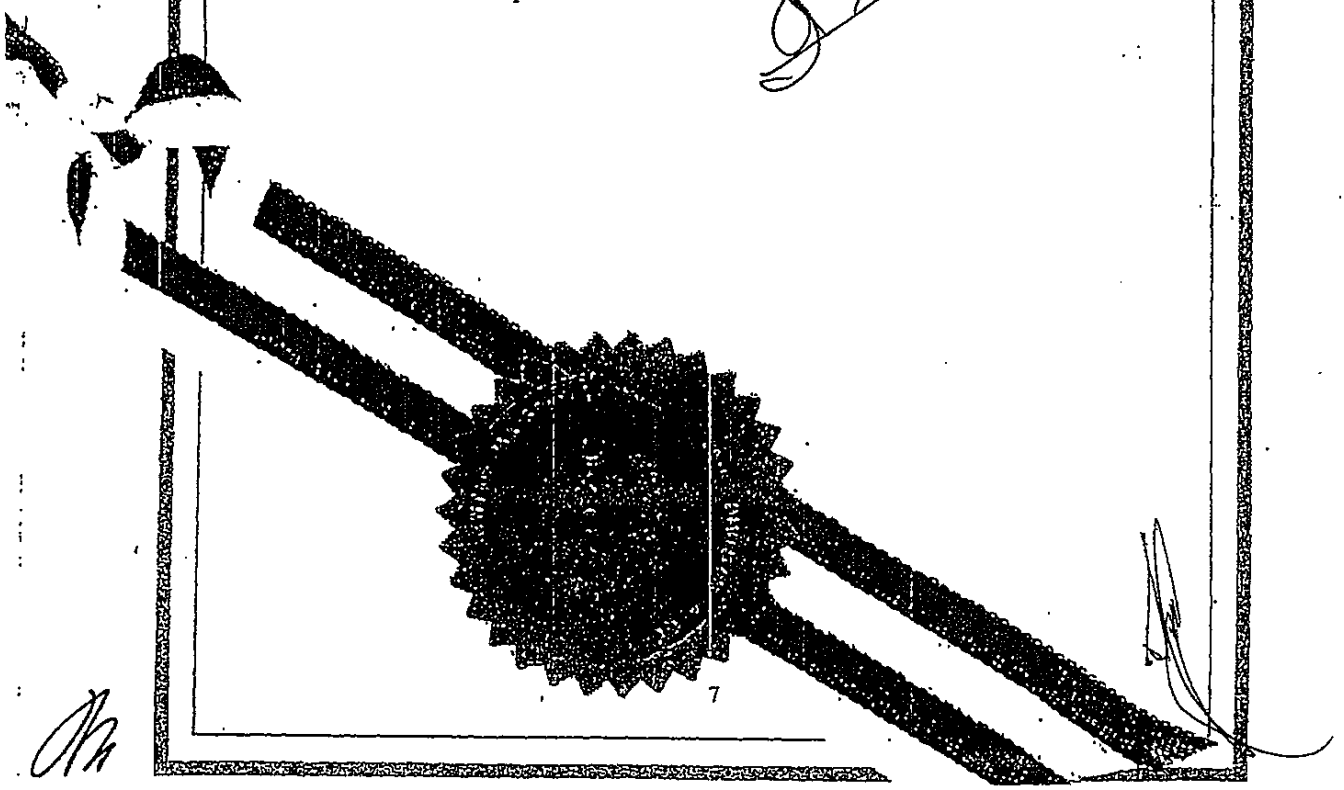
The Annex to this Agreement forms an integral part of this Agreement, and all reference to the "Agreement" shall include reference to the Annex.

IN WITNESS WHEREOF the undersigned, duly authorized thereto, have signed this Agreement.

DONE in duplicate, in Japanese and English languages, both texts being equally authentic, at Islamabad on 30th April, 2005.

For the Government of
the Islamic Republic of Pakistan:

For the Government of Japan:



ANNEX

In case the Government of the Islamic Republic of Pakistan should impose consular fees or require the obtainment of import license or certificate of foreign exchange coverage in respect of the importation of items in the future, the Experts, the Senior Volunteers, members of the Mission, the Representative ,the Staff and their families as well as the Office shall be exempted from such consular fees or such requirement, in respect of the importation of the items referred to in Article V.1.(1)(b), Article VII.1.(1) and 2.(2), and Article IX.2.(1)(b) and 2.(2)(a).

(DRAFT)

Appendix 2

MAIN POINTS DISCUSSED

I. PDM & PO

Both sides agreed on the contents of the Project Design Matrix (PDM) and tentative Plan of Operation (PO) as shown in Annex 1 and 2 of Appendix 1 respectively. The PDM and PO are to be flexibly revised according to the progress and achievement of the Project, upon mutual agreement between NHA and JICA at JCC by signing the minutes of meetings.

II. CULVERT INSPECTION

In response to the NHA's request to include culvert inspection into the scope of the Project, the Japanese side agreed to support only the development of a manual for culvert inspection and a culvert inspection format (Activity 1-3). Both sides confirmed that culvert inspection and culvert repair method selection will be out of the scope of the Project and be implemented by NHA at its own responsibility.

III. TARGET BRIDGES OF ACTIVITY 2-1

The six (6) candidate target bridges of Activity 2-1, which is master trainers' trainings for the staff of NHA's Headquarters and Regional Offices, are listed in Annex 6. After the commencement of the Project, several bridges, from four (4) to nine (9), with common damages and of popular design and length in or around Islamabad will be added to the list by the JICA experts and the counterpart personnel at NHA's Headquarters. Based on this list, about five (5) target bridges will be finally decided through consultations between the JICA experts and the counterpart personnel at NHA's Headquarters.

IV. TARGET STAFF OF ACTIVITY 2-1 & 2-2

For Activity 2-1 and Activity 2-2, which is trainings for the staff of Maintenance Units by the master trainers of Regional Offices, the criteria for selection of participants in the trainings will be set up by the counterpart personnel at NHA's Headquarters and the JICA experts. The participants will be finally decided at the beginning of each activity through mutual consultations between the JICA experts and the counterpart personnel at NHA's Headquarters. Upon successful completion of the master trainers' trainings, JICA and NHA will grant a certificate to the participants.

V. SCHEDULE OF ACTIVITY 2-1, 2-2 & 2-3

Both sides agreed that the schedule for implementation of Activity 2-1, 2-2 and 2-3, which is bridge inspection, bridge repair method selection and data input to a bridge inspection database implemented by the staff of Maintenance Units, will be considered preferably avoiding the flood season, from July to October, and Ramadan for smooth and effective implementation of the Activities.

VI. EQUIPMENT

In response to the request from NHA, non-destructive bridge testing equipment such as Ground Penetrating Radar, Electrochemical Polarization Corrosion Measurement, Measurement by Sonic Testing, Schmidt Hammer, Carbonation Depth Measurement, Crack Scale and Test Hammer will be provided by JICA. The specifications and the number of each equipment to be procured in the Project will be determined through mutual consultations between the JICA experts and the counterpart personnel of the NHA's Headquarters.
Additionally, NHA requested for under bridge inspection trucks in the Second Detailed Planning Survey and JICA will consider their necessity for the achievement of the project purpose during implementation.

VII. TRAININGS IN JAPAN

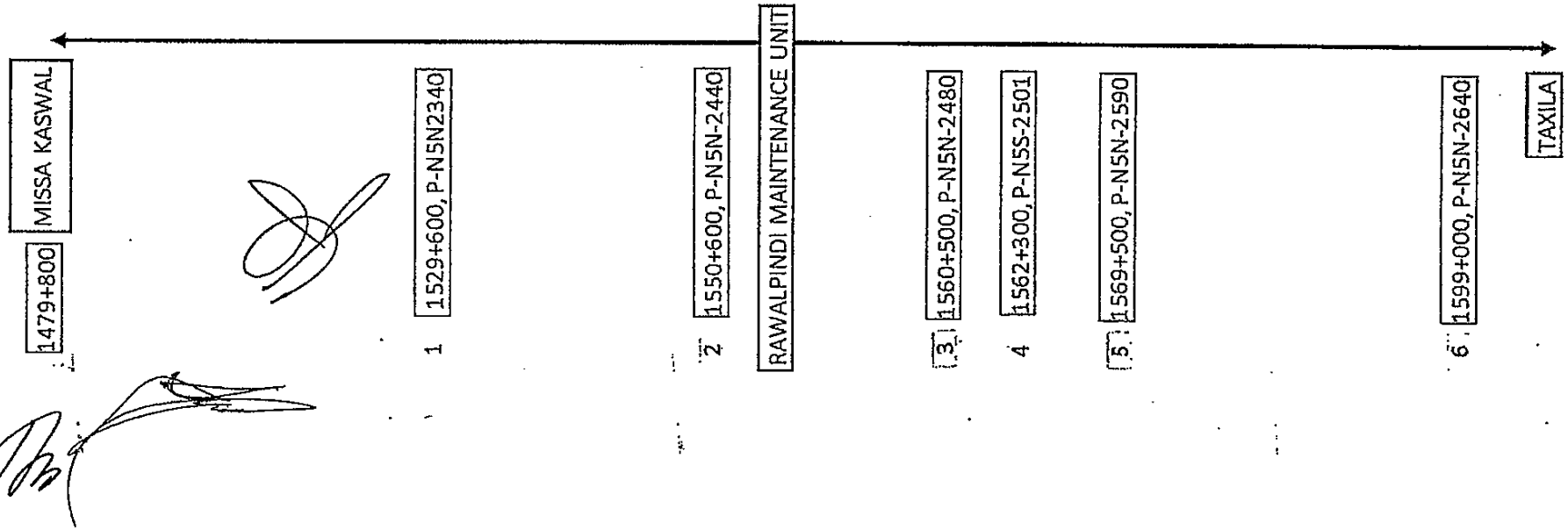
During the Second Detailed Planning Survey, the Japanese side took note of the request from NHA for trainings in Japan as a component of the Project and will consider their necessity for the achievement of the project purpose during the implementation of the Project.

Annex 6 List of Candidate Target Bridges of Activity 2-1

Annex 6

LIST OF CANDIDATE TARGET BRIDGES OF ACTIVITY 2-1

	CHAINAGE	ID No. (on BMS)	BRIDGE TYPE	BRIDGE LENGTH	MAJOR DEFECTS
1	1529+600	P-N5N2340	Concrete Arch	363.144m, 15 spans	(1) drainage (2) scouring (3) railing (4) expansion joint
2	1550+600	P-N5N-2440	Reinforced Concrete Girder	21.495m (+10.257+), 3 spans	(1) crack on abutment (2) crack on beam
3	1560+500	P-N5N-2480	Reinforced Concrete Girder	38.933m, 3 spans	(1) exposed reinforcing bar (2) spalling at bottom of girder (3) railing
4	1562+300	P-N5S-2501	Brick Arch	3.31m, 1 span	(1) honeycomb of arch brick
5	1569+500	P-N5N-2590	Prestressed Concrete Girder	100.286m 4 spans	(1) exposed reinforcing bar at curb (2) railing
6	1599+000	P-N5N-2640	Prestressed Concrete Girder	152.626m 5 spans	(1) exposed reinforcing bar at slab (2) scouring



(2) JCC-1_2016/7/29

【the 1st JCC】

Date and time	14:30 – 15:45, July 29th, 2016
Venue	Member (Planning) Conference Room (2FL)
Attendance	NHA Mr. Raja Nowsherwan /M(Planning), Mr. Saqlain Haider/GM(RAMD) Mr. Muhammad Asif Azam/DD(BMS) JICA Experts Mr. Igo, Mr. Fujimoto, Mr. Tomi, Ms. Yoneda JICA Pakistan Office Ms. Tomoko Fujikawa, Ms. Naila Almas
Document	None
Outline	✓ About Project Overview, Scope and Implementation Policy
Subjects	■Subjects 1) Opening of the Meeting 2) Introduction of Participants 3) Outline of the Project 4) Clarification from JICA Experts 5) Summary of the Monitoring Sheet 6) Progress and Future Plan 7) Open Discussion 8) Remarks 9) Closing
Details	Mr. Igo made the overview presentation on abovementioned 1) to 6) including requirements both from NHA and JICA Experts. All the members of JCC generally agreed with Project Design Matrix (PDM) and Plan of Operation (PO). After detailed discussion, the JCC confirmed the contents of the overview presentation (Annex-A). Further detailed discussion about various activities mentioned in PDM & PO shall be carried out by JWG.
Discussion	Referring to agenda points 7) and 8), the detail of discussion is hereinafter: <u>Requests from NHA</u> - Before conducting MT Training, Member (Planning) suggested to dispatch Mr. Ikramus Saqlain Haider, GM (RAMD) and Mr. Muhammad Asif Azam, DD (RAMD) to Japan for approximate two (2) weeks in order to study the overall BMS of Japan and understand the procedures of inspection, maintenance and operation of bridge structures for appropriately defining NHA's objectives. - JICA experts expressed their intention to acquire the services of Dr. Shahid Nasir as Local Expert for this project. In this regard NHA has no objection as Dr Shahid Nasir, M/s Finite Engineering Ltd., is very proficient in bridge

	engineering and furthermore has obtained PhD in Structural Engineering from Japan. It is expected that he will be suitable in addressing technical and linguistic problems. Response from JICA Pakistan Office - JICA Pakistan Office is agreed to the proposal of advance dispatching of Mr. Ikramus Saqlain Haider, GM (RAMD) and Mr. Muhammad Asif Azam, DD (RAMD) to Japan for approximate two (2) weeks and will request to JICA Headquarters accordingly. Response from JICA Experts - JICA Experts will report the advanced dispatching of NHA officers to JICA Headquarters. JICA Experts will arrange their visits and tour in Japan as they have done lots of bridge-related projects in Japan. - JICA Experts will deliberate in-house on the issue of engaging M/s Finite Engineering Ltd. in light of conflict of interest highlighted by NHA as the firm is already engaged in several other assignments of NHA. Meanwhile, JICA Experts will remain in touch with Mr. Asif Azam for all project related matters. Comments from JICA Experts - JICA Experts appreciates the efforts of Mr. Asif Azam to arrange the required data including existing inspection forms and manuals. - JICA Experts hopes NHA to collaborate in delivery and collection of questionnaires for understanding knowledge level of NHA staff. - JICA Experts asks NHA to support for the site visit to the target bridges shown in R/D (Record of Discussion) in order to study on damaged bridges in NHA. Answers from NHA - NHA will provide all necessary support, data and documents required by JICA Experts. Further, NHA will also collaborate in the providing details of NHA staff as per questionnaires. - NHA requested to include Shaia Bridge on N-35 in the candidate bridges list. NHA will try to arrange the site visit in next week but it will be better to postpone till next JICA Expert visit due to short notice for security arrangements.
Responsible for the wording	Prepared by Yukio Igo on July 31st, 2016 Revised by : Y. Fujimoto on July 31st, 2016 Revised by : Asif Azam on August 3rd. 2016, but still DRAFT

(3) JCC-2_2016/12/9

【the 2nd JCC】

Date and time	9:45-11:00 am, December 9th, 2016
Venue	NHA Auditorium 2nd Floor
Attendance	• **NHA** Mr. Raja Nowsherwan /M(Planning), Mr. Ikramus Saqlain Haider /GM (RAMD) ,Mr. M. Asif Azam/DD (RAMS/BMS) • **JICA Experts Team** Mr. IGO, Mr. FUJIMOTO, Mr. TOMI, Mr. TOMIYAMA, Ms. Momina • **JICA Pakistan Office** Ms. Tomoko Fujikawa, Ms. Naila Almas • **JICA Japan** Mr. Nobuyuki Tsuneoka, Mr. Takahiro Kuge
Subjects	■Subjects 1) Opening of the Meeting 2) Introduction of Participants 3) Outline of the Project • Progress of Project • Revision of PDM(Project Design Matrix) • Revised Schedule of Project • NHA Staff (2 persons) visit to Japan 4) Discussion 5) Others
Details	Detailed presentation was made by Mr. Yukio IGO, particularly highlighting the following aspects: • Inspection manual • Revised Scope • List of Equipment • MT Training schedule and contents • The selected bridges for MT training • Updated PDM
Discussion	All the members of JCC generally agreed on the contents of Inspection manual, MT Training and Revised PDM. Referring to agenda points 4) and 5), the detail of discussion is hereinafter: - Instead of updating the old BMS, new BMS Software with prioritizing function will be implemented. A BMS Expert will also be engaged in BMS Programming. - Wah Garden and Shahia Bridges were selected by JICA Experts for MT Training because of ease of accessibility to these bridges. In this regard, Member Planning suggested to include Attock Bridge in the list of selected bridges for training in view of his point that larger bridge can give a better description of protection works. - JICA & NHA are agreed to the proposal of advance dispatching of Mr.

	Ikramus Saqlain Haider (GM) and Mr. M. Asif Azam DD (RAMS). (However, Chairman insisted that GM's schedule must be short or someone else shall be replaced for him. Eventually and allegedly, Mr. Aftab Ullah Babar DD (Structures, RAMD) along with DD (RAMS) will go to Japan for 2 weeks in January 2017.) - In response to the Chairman's visit to Japan, the point of arranging another visit to Japan for Chairman and other higher officials is under discussion. - In response to Mr. Asif and Ms Fujikawa's suggestion of checking and finalization of the two manuals, Member (Planning) suggested to acquire services of Col. Iqbal Haq (in-house consultant at NHA) for finalization of the Bridge/Culvert Inspection and Repair Manual.

(4) PDM Amendment-1_2017/2/8

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, 8th February, 2017

Mr. Yukio IGO
Project Manager / Bridge Inspection
The Project for Technical Assistance on Implementation of Bridge Management System in NHA
Pacific Consultants Co., Ltd.
Japan

Mr. Raja Nowsherwan
Member (Planning)
National Highway Authority
Islamic Republic of Pakistan

AMENDMENT POINTS

1. Project Purpose

Before	Amended Version
Cost estimate necessary for bridge maintenance every fiscal year implemented on the basis of bridge inspection results of the bridges on National Highways in Pakistan.	Annual bridge maintenance plan prepared on the basis of the latest bridge inspection data of entire NHA Network.
Reason: Because bridge inspection data has not been carried out regularly since the ex-BMS (Smart Bridge) was developed, NHA's bridge maintenance plan including all the procedures must be prepared as priority.	

2. *Output 1*

Before	Amended Version
Manuals and a database developed for bridge inspection and bridge repair method selection	Manuals, Database and BMS developed for bridge inspection and bridge repair method selection
Reason: Because bridge inspection data has not been carried out regularly since the ex-BMS (Smart Bridge) was developed, BMS with the prioritization function is newly made in this project..	

3. Activity 1

Before	Amended Version
1-1 Develop 3 types of draft manuals (for (1) bridge inspection, (2) data input to a bridge inspection database, and (3) bridge repair method selection).	1-1 Develop 3 types of draft manuals i.e. (1) bridge/culvert inspection, (2) bridge repair method selection and (3) data input to Database.
1-2 Develop a draft bridge inspection format.	1-2 Develop draft bridge/culvert inspection formats.
1-3 Develop a manual for culvert inspection and a culvert inspection format.	—
1-4 Develop a draft bridge inspection database (in Excel/Access).	1-4 Develop prototype Database & BMS.
1-5 Develop 2 types of draft training materials for the master trainers of NHA's HQ and ROs (for (1) bridge inspection and (2) bridge repair method selection).	1-5Develop 2 types of draft training materials for training i.e. (1) bridge/culvert inspection and (2) bridge repair method selection.
1-6Review and finalize the above 3 types of manuals (Activity 1-1), a format (Activity 1-2), a data base (Activity 1-4) and 2 types of training materials (Activity 1-5).	1-6Review 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).

Reason: Because (1) BMS with the prioritization function is newly made in addition to Bridge Inspection Database, and (2) the training is conducted for Master Trainer candidates in order to improve capability of NHA staff though all of them are not expected to achieve to deserve to be the certified Master Trainer, those expressions and wordings are modified.

4. Activity 2

Before	Amended Version
2-1 Implement 3 types of master trainer's training for the staff of NHA's HQ and ROs at the target bridges in/around Islamabad (for (1) bridge inspection, (2) bridge repair method selection, and (3) data input to a bridge inspection database).	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 By master trainers (trained in Activity 2-1), implement 3 types of training for the staff of MUs (for (1) bridge inspection, (2) bridge repair method selection, and (3) data input to a bridge inspection 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 By the staff of MUs (trained in Activity 2-2), implement (1) bridge inspection, (2) bridge repair method selection, and (3) data input to a bridge inspection database for all the bridges.	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).
Reason: Because (1) the training target is not only bridge but also culvert and (2) all the staff of MUs are not dedicated to bridge/culvert inspection, those expressions are revised.	

5. Output 3

Before	Amended Version
Data on all the bridges of National Highways in Pakistan input by MUs to the existing BMS (Smart Bridge) available to NHA's HQ and ROs.	Data on all the bridges of National Highways in Pakistan input by MUs to Database available to NHA's HQ and ROs.
Reason: Because MUs will input data to Bridge Inspection Database, not Smart Bridge (correction of improper usage).	

6. Activity 3

Before	Amended Version
3-1 Implement training for the staff of NHA's HQ of operation and management of the existing BMS (Smart Bridge).	3-1 Implement training for NHA HQ regarding management of BMS (software and database).
3-2 Transfer the data from a bridge inspection database input by the staff of MUs to the existing BMS (Smart Bridge).	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 Division) staff.
3-3 Estimate the cost necessary for bridge maintenance in the fiscal year of 2019 based on the data transferred to the existing BMS (Smart Bridge) in Activity 3-2.	3-3 Prepare the annual bridge/culvert maintenance plan including estimated budget for 2019 based on the data transferred to BMS (Activity 3-2).
Reason: Because (1) BMS is newly made instead of the existing BMS (Smart Bridge), (2) to clarify the roles of NHA staff and HQ RAMD staff respectively, and (3) to define the task of maintenance plan not just limited only to budget estimation.	

Attached Documents:

Annex 1 : 2nd JCC Meeting Memorandum

Annex 2 : PDM (Version.2 amended)

Annex 3 : PO (Version.2 amended)

【the 2nd JCC】

Date and time	9:45-11:00 am, December 9th, 2016
Venue	NHA Auditorium 2nd Floor
Attendance	• **NHA** Mr. Raja Nowsherwan /M(Planning), Mr. Ikramus Saqlain Haider /GM (RAMD) ,Mr. M. Asif Azam/DD (RAMS/BMS) • **JICA Experts Team** Mr. IGO, Mr. FUJIMOTO, Mr. TOMI, Mr. TOMIYAMA, Ms. Momina • **JICA Pakistan Office** Ms. Tomoko Fujikawa, Ms. Naila Almas • **JICA Japan** Mr. Nobuyuki Tsuneoka, Mr. Takahiro Kuge
Subjects	■Subjects 1) Opening of the Meeting 2) Introduction of Participants 3) Outline of the Project • Progress of Project • Revision of PDM(Project Design Matrix) • Revised Schedule of Project • NHA Staff (2 persons) visit to Japan 4) Discussion 5) Others
Details	Detailed presentation was made by Mr. Yukio IGO, particularly highlighting the following aspects: • Inspection manual • Revised Scope • List of Equipment • MT Training schedule and contents • The selected bridges for MT training • Updated PDM
Discussion	All the members of JCC generally agreed on the contents of Inspection manual, MT Training and Revised PDM. Referring to agenda points 4) and 5), the detail of discussion is hereinafter: - Instead of updating the old BMS, new BMS Software with prioritizing function will be implemented. A BMS Expert will also be engaged in BMS Programming. - Wah Garden and Shahia Bridges were selected by JICA Experts for MT Training because of ease of accessibility to these bridges. In this regard, Member Planning suggested to include Attock Bridge in the list of selected bridges for training in view of his point that larger bridge can give a better description of protection works. - JICA & NHA are agreed to the proposal of advance dispatching of Mr.

	Ikramus Saqlain Haider (GM) and Mr. M. Asif Azam DD (RAMS). (However, Chairman insisted that GM's schedule must be short or someone else shall be replaced for him. Eventually and allegedly, Mr. Aftab Ullah Babar DD (Structures, RAMD) along with DD (RAMS) will go to Japan for 2 weeks in January 2017.) - In response to the Chairman's visit to Japan, the point of arranging another visit to Japan for Chairman and other higher officials is under discussion. - In response to Mr. Asif and Ms Fujikawa's suggestion of checking and finalization of the two manuals, Member (Planning) suggested to acquire services of Col. Iqbal Haq (in-house consultant at NHA) for finalization of the Bridge/Culvert Inspection and Repair Manual.

Project Design Matrix

Project Title: The Project for Technical Assistance on Implementation of Bridge Management System in NHA

Version 2 amended
Dated 14, January, 2017

Implementing Agency: National Highway Authority

Target Group:

Period of Project: July, 2016 – January, 2019 (30 months)

Project Site: in/around Islamabad, Pakistan **Model Site:**

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption	Achievement	Remarks
Overall Goal					
Bridge maintenance status improved on the bridges of National Highways in Pakistan.	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.	Output data of the BMS	· Copyright of software (source code) · Availability of optimum maintenance budget. · Continuous update of bridge data		The existing BMS has not been used.
Project Purpose					
Annual bridge maintenance plan prepared on the basis of the latest bridge inspection data of entire NHA Network.	Bridge maintenance budget document with breakdowns prepared by [September, 2018].	Analysis of complete input data to BMS and bridge maintenance budget document (with anticipated budget requirement for forthcoming years)	· 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		
Outputs					
1. Manuals, Database and BMS developed for bridge inspection and bridge repair method selection	1-1. Draft manuals for (1) bridge/culvert inspection, (2) bridge repair method selection by [December, 2016] and draft manual for (3) data input to Database & BMS developed by [December, 2017]. 1-2. Draft bridge/culvert inspection formats developed by [December, 2016]. 1-3. Prototype Database developed by [July, 2017], and prototype BMS by [December, 2017]. 1-4. 2 types of draft training materials for the master trainers for (1) bridge/culvert inspection and (2) bridge repair method selection developed by [December, 2016] 1-5. Manuals (1-1), formats (1-2), Database & BMS (1-3), and training materials (1-4) finalized by [September, 2018]	1-1. 3 types of draft manuals 1-2. Draft bridge/culvert inspection formats 1-3. Prototype Database & BMS 1-4. 2 types of draft training materials 1-5. 3 types of manuals, bridge/culvert inspection formats, Database & BMS, and 2 types of training materials	· BMS is continuously in use by NHA for preparation of bridge maintenance plan.	Bridge Inspection Database is separately scheduled from others.	Bridge inspection data has not been carried out regulary since the existing BMS (Smart Bridge) was developed.

2. 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.	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] 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] 2-3. Bridge/culvert inspection, bridge repair method selection, and data input to Database completed for all NHA bridges by [June, 2018] 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] 2-5. Certification of master trainers after training by JICA experts (scoring more than 80% in capacity test)	2-1. Training records and reports 2-2. Training records and reports 2-3. Completed bridge inspection formats and input data to a bridge inspection database 2-4. Input data to Database and its evaluation 2-5. Test records and reports		The 1st Training in Japan is additionally scheduled from January 15th to 27th, 2017. The 1st MT training is postponed from November to March, 2017. The number of MT training participants will be increased because the training is conducted for candidates in order to improve capability of NHA staff though all of them are not expected to achieve to deserve to	Dispatching two senior engineers to Japan before MT training is strongly suggested.
3. Data on all the bridges of National Highways in Pakistan input by MUs to Database available to NHA's HQ and ROs.	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. Training records and reports 3-2. Input data to Database 3-3. Bridge maintenance budget document with breakdown		BMS with the prioritization funcrtion is newly made in addtion to Bridge Inspectton Database	BMS with the prioritization function is strongly required

Activities	Inputs		Pre-Conditions
	The Japanese Side	The Pakistani Side	
1-1. Develop 3 types of draft manuals i.e. (1) bridge/culvert inspection, (2) bridge repair method selection and (3) data input to Database 1-2. Develop draft bridge/culvert inspection formats. 1-3. Develop prototype Database & BMS. 1-4. Develop 2 types of draft training materials for training i.e. (1) bridge/culvert inspection 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) 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) 3-1. Implement training for NHA HQ regarding management of BMS (software and database). 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 3-3. Prepare the annual bridge/culvert maintenance plan including estimated budget for 2019 based on the data transferred to BMS (Activity 3-2)	1. EXPERTS 1) Bridge Inspection Expert 2) Bridge Repair Expert 3) BMS Expert 4) Capacity Development Expert 5) Project Monitoring Expert 6) Local Coordinator (Pakistani) 2. EQUIPMENT (subject to changes) Non-destructive testing equipment such as · Crack Scale & Test Hammer · Concrete Compression Strength · Crack Depth · Rebar Arrangement · Rebar & Cover · Rebar Corrosion · 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)	1. PERSONNEL Administrative Personnel 1) Person in Charge: Member (Planning) 2) Project Manager: General Manager (RAMD) 3) Member Director (Design) Counterpart Personnel 1) Project Coordinator: Deputy Director (BMS) 2) Assistant Project Coordinator: Assistant Director (BMS) 2. OFFICE & FACILITIES · Office for JICA Experts in NHA's HQ Building with office furniture, internet and telephone. 3. ARRANGEMENT · Training Arrangements · Transportation for the field trips of JICA Experts in/around Islamabad. 4. BUDGET ALLOCATION Budget for traveling and accommodation expenses of the training participants.	· 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. **<Issues and countermesures>** Crack Scale and Test Hammer shall be prpared for MT Training and OJT, while other non destructive test equipment and computers (Licensed Database with Server and Terminals) will be discussed after the 1st MT Training (April, 2017) Standard Operation Procedure (SOP) related to bridge maintenance is need to be built up.

Tentative Plan of Operation

Version 2 ameded
Dated 14, January, 2017

Project Title:

Inputs	Year	1st Year				2nd Year				3rd Year				4th Year				Remarks	Monitoring: Issue	Monitoring: Solution
		I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV			
Expert																				
Project Manager / Bridge inspection — Yukio IGO	Plan																			
	Actual																			
Bridge Repair — Yoshiichi FUJIMOTO	Plan																			
	Actual																			
Bridge Management System — Akio MORI	Plan																			
	Actual																			
Capacity Development — Haruo TOMIYAMA	Plan																			
	Actual																			
Project Monitoring — Kenichi TOMI	Plan																			
	Actual																			
Equipment																				
Crack Scale & test Hammer for MT training	Plan																	Equipment shall be categorized according to its nature.	Crack Scale and Test Hammer shall be prepared for MT Training.	Other non destructive test equipment and computers will be discussed after the 1st MT training (Apirl 2017).
	Actual																			
Non Destructive Tests	Plan																			
	Actual																			
Computers (Licensed Severs and Terminals)	Plan																			
	Actual																			
Training in Japan																				
	Plan																	Dispatching two senior engineers to Japan was requested strongly.	Two sennior engineers visit before the 1st MT Training.	Planning the addition in January, 2017.
	Actual																			
In-country/Third country Training																				
Master Trainer Training	Plan																	Dispatching two senior engineers to Japan before the 1st MT Trainig.	The 1st MT Training is originally scheduled in Novermber 2016.	Postpone the 1st MT training from November to March.
	Actual																			

Activities / Sub-Activities	Year	1st Year				2nd Year				3rd Year				4th Year				Responsible Organization: Japan	Responsible Organization: NHA	Achievements	Issue & Countermeasures
		I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV				
0-1 Analyze the issues to be improved in the current bridge and culvert maintenance by	Plan																	2nd	1st	Ex-BMS is not working.	Bridge Inventry Data collected.
	Actual																				
0-2 Study the current bridge and culvert inspection implemented by the staff of MUs on daily basis and regular basis (twice a year).	Plan																	2nd	1st	Not regular basis.	Proposed to make Standard Operation Procedure (SOP).
	Actual																				
0-3 Study the existing bridge and culvert inspection format (in NHA Code 2005).	Plan																	2nd	1st	Format (6 pages)	not enough for prioritization function.
	Actual																				
0-4 Study the system of and data input to the existing BMS (Smart Bridge).	Plan																	2nd	1st	BMS Manual	BMS software cannot be changed.
	Actual																				
Output 1: Manuals and a database developed for bridge inspection and bridge repair method selection																					
1-1 Develop 3 types of draft manuals i.e. (1) bridge/culvert inspection, (2) bridge repair method selection and (3) data input to Database.																					
1-1-1. Draft a manual for bridge/culvert inspection based on the findings of Activity 0-1 & 0-2.	Plan																	2nd	1st	Still drafting by Experts.	Need more human resource from NHA.
	Actual																				
1-1-2 Draft a manual for bridge repair method selection based on the findings of Activity 0-1 & 0-3.	Plan																	2nd	1st	Bridge database and new BMS are necessary.	Decision will be made after 1st MT Trailnng.
	Actual																				

1-1-3 Draft a manual for data input to Database developed in Activity 1-3.	Plan	2nd	1st	Still drafting by Experts.	Need more human resource from NHA.
	Actual				
1-2 Develop draft bridge/culvert inspection formats.	Plan	2nd	1st	Finalized	
	Actual				
1-3 Develop Prototype Database & BMS.					
1-3-1 Study the current IT environment of ROs and MUs including the number of PCs	Plan	2nd	1st	Still drafting by Experts.	Need more human resource from NHA.
	Actual				
1-3-2 Consider the specification of Database & BMS.	Plan	2nd	1st	Finalized	
	Actual				
1-3-3 Develop Prototype of Bridge Inspection Database & BMS.	Plan	2nd	1st	Finalized	
	Actual				
1-4 Develop 2 types of draft training materials for training i.e. (1) bridge/cuvlert inspection and (2) bridge repair method selection.					
1-4-1 Develop bridge inspection training materials for MT training (basic & advance).	Plan	2nd	1st	10 ROs and 47 MUs.	
	Actual				
1-4-2 Develop bridge repair method selection manuals for MT training (basic & advanced).	Plan	2nd	1st	Bridge database and new BMS are necessary.	Decision will be made after 1st MT Traiinng.
	Actual				
1-5 Review and finalize the above 3 types of manuals, inspection formats, prototypes and 2 types of training materials.					
1-5-1 Review the lessons learned from Activity 2-1, 2-2 & 2-3.	Plan	1st	2nd	Still drafting by Experts.	Draft by the end of December.
	Actual				
1-5-2 Revise the manuals, a format, a database and training materials referring to the	Plan	1st	2nd	Still drafting by Experts.	Draft by the end of December.
	Actual				
1-5-3 Re-review the lessons learned from Activity 2-1, 2-2 & 2-3.	Plan	2nd	1st		
	Actual				
1-5-4 Finalize the manuals, a format , a database and training materials referring to the lessons reviewed in Activity 1-5-3.	Plan	2nd	1st		
	Actual				
Output 2: Trainers of bridge inspection and bridge repair method selection trained at NHA's HQ and ROs, and bridge inspection and					
2-1 Implement 3 types of training for capacity building of NHA i.e. (1) bridge/culvert inspection. (2) bridge repair method selection, and (3) datat input to Database.					
2-1-1 Set up a criteria for selection of participants in MT training. Decide the participants in MT training from NHA's HQ, ROs and MUs.	Plan	1st	2nd	Still discussing.	NHA requested 50 candidates to participate.
	Actual				
2-1-2 Decide the target bridges of MT training (about 5 bridges in/around Islamabad).	Plan	1st	2nd	2 bridges	Shahia Bridge, Wah Garden Bridge
	Actual				
2-1-3 Set up a criteria for the equipment to be provided for non-destructive bridge testing.	Plan	1st	2nd	Crack Scale and Test Hammer	100 sets for OJT
	Actual				
2-1-4 Prepare the contents and syllabus of MT training.	Plan	1st	2nd	Schedule confirmed.	
	Actual				
2-1-5 Carry out a questionaire for the participants of MT training (at beginning, interim, and final stages).	Plan	1st	2nd	10 potencial candidates on October 17th, 2016	
	Actual				
2-1-6 Implement MT training of (1) bridge/culvert inspection and (2) bridge repair	Plan	1st	2nd		
	Actual				
2-1-7 Implement MT training of (3) data input	Plan	1st	2nd	Still discussing	

to Database.	Actual					
2-1-8 Training in Japan.	Plan	1st	2nd	Still discussing.		
	Actual					
2-1-9 Carry out a capacity test for MT in order to grant a certificate to those participants scored 80% or higher at the capacity test .	Plan	1st	2nd			
	Actual					
2-2 Implement 3 types of OJT for the field staff by Master Trainers (trained in Activity 2-1).						
2-2-1 Set up a criteria and mimum requirement of participants from MUs in training by MTs of ROs. Decide the participants in training at each RO.	Plan	2nd	1st			
	Actual					
2-2-2 Prepare schedule for training at each RO and OJT training at each MU.	Plan	–	1st			
	Actual					
2-2-3 Decide the target bridges of OJT training at each of MU.	Plan	–	1st			
	Actual					
2-2-4 By MTs, implement 3 types of training for the staff of MUs.	Plan	–	1st			
	Actual					
2-2-5 By MTs of NHA's HQ and JICA Experts (only if no security concerns), monitor the training by MTs of ROs.	Plan	2nd	1st			
	Actual					
2-3 Implement above 3 activities for all the bridges/culverts, by field staff (trained in Activitiy 2-1 & 2-2).						
2-3-1 Prepare schedule for 3 types of activities at each of 36 MUs.	Plan	–	1st			
	Actual					
2-3-2 By the staff of MUs, implement 3 types of activities for all the bridges of each of 36	Plan	–	1st			
	Actual					
2-3-3 By MTs of NHA's HQ and JICA Experts (only if no security concerns), monitor 3 types of activities by the staff of MUs.	Plan	2nd	1st			
	Actual					
2-3-4 By MTs of ROs, confirm all the bridgs of each MU has been inspected and their data input to a bridge inspection database.	Plan	–	1st			
	Actual					
2-3-5 By MTs of NHA's HQ and JICA Experts, evaluate the accuracy of 3 types of activities by the staff of MUs.	Plan	2nd	1st			
	Actual					
Output 3: Data of Bridges on National Highways in Pakistan input by MUs to the existing BMS (Smart Bridge) available to NHA's HQ.						
3-1 Implement trainig for NHA HQ regarding management of BMS (software and database).						
3-1-1 Prepare the contents and syllabus of training for the staff of NHA's HQ for management of the existing BMS (Smart Bridge).	Plan	1st	2nd			
	Actual					
3-1-2 Implement training for the staff of NHA's HQ for management of the existing BMS (Smart Bridge).	Plan	1st	2nd			
	Actual					
3-2 Monitor bridge data input by NHA staff (Activity 2-3) to Database, and data transfer to BMS by HQ RAMD staff.						
3-2-1 Trial of transferring the sample data from a bridge inspection database input by the staff of MUs to the exisitng BMS (Smart Bridge).	Plan	2nd	1st			
	Actual					

Activity		Year 1–4 (quarters)	Remarks		Issue	Solution
3-2-2 Transfer all the data from a bridge inspection database input by the staff of MUs to the existing BMS (Smart Bridge).	Plan		2nd	1st		
	Actual					
3-3 Prepare the annual bridge/culvert maintenance plan including estimated budget for 2019 based on the data transfered to BMS (Activity 3-2).	Plan		2nd	1st		
	Actual					
Duration / Phasing	Plan					
	Actual					

Monitoring Plan	Year	1st Year				2nd Year				3rd Year				4th Year				Remarks	Issue	Solution
		Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅰ	Ⅱ	Ⅲ	Ⅳ			
Monitoring																				
Joint Coordination Committee	Plan																			
	Actual																			
Set-up the Detailed Plan of Operation	Plan																			
	Actual																			
Submission of Monitoring Sheet	Plan																			
	Actual																			
Monitoring Mission from Japan	Plan																			
	Actual																			
Joint Monitoring	Plan																			
	Actual																			
Post Monitoring	Plan																			
	Actual																			
Reports/Documents																				
	Plan																			
	Actual																			
Project Completion Report	Plan																			
	Actual																			
Public Relations																				
	Plan																			
	Actual																			
	Plan																			
	Actual																			

(5) JWG with GM (RAMD)_2017/5/19

Minutes of JWG Meeting

Date	May 19th , 2017
Attendance	NHA Mr. Ikramus Saqlain Haider (GM RAMD),Mr. Muhammad Asif Azam/DD(BMS) JICA Experts Team Mr. Yukio IGO, Mr. Akio Mori, Ms. Momina
Outline	✓ BMS
Discussion	The points discussed in the meeting with their conclusion are as follows 1. Selection of Certified Master Trainers Based on the results of examination and inspection reports, 20-25 candidates will be shortlisted by JICA Experts and afterwards 15 candidates will be finalized as certified Master Trainers by NHA. 2. Bridge Inspection data prototype will be developed in July 2017 as version 1.0. From July to Nov'17, inspection data of 100 bridges and 200 culverts will be collected by RAMS & Certified Master Trainers. The data will then be imported in Bridge Database prototype for validation purpose. The BMS Software will be revised accordingly. 3. The BMS Software shall be developed as network-based, with limited access to Master Trainers i.e., submit the updated bridge inspection/ repair data to database. 4. The Bridge Inspection Database should be developed in such a way that it can be integrated with Road Database and GIS. 5. Master Trainers will be able to upload and gather information from bridge information data in their jurisdiction folder. 6. A set of NDT equipment will be placed at RAMD HQ and some of those will be placed at Regional Office. Inspection squad to be established (at RAMD NHA HQ) will take care of all the related issues.

Ikramus Saqlain Haider
General Manager (RAMD)
NHA HQ

Yukio IGO
Project Manager
JICA Expert

WITNESSED BY

Muhammad Asif Azam
Deputy Director (RAMS)

(6) JCC-3_2017/7/12

MINUTES OF MEETINGS
OF
THE THIRD JOINT COORDINATION COMMITTEE MEETING
ON
THE PROJECT FOR TECHNICAL ASSISTANCE ON IMPLEMENTATION OF BRIDGE MANAGEMENT SYSTEM IN NHA

The Third Joint Coordination Committee (hereinafter referred to as "JCC") meeting on the project for Technical Assistance on Implementation of Bridge Management System in NHA (hereinafter referred to as the "Project") was held on the 12th of July, 2017 with attendance of JCC members representing the National Highway Authority (hereinafter referred to as "NHA"), the Japan International Cooperation Agency (hereinafter referred to as "JICA") and members of the JICA Expert Team (hereinafter referred to as the "Expert Team") to discuss the schedule and the progress of the Project based on the 3rd Project Monitoring Sheets submitted by the Expert Team on the 12th of July, 2017.
As a result of the discussions, JCC members shared common understandings on the issues as Attachment.

Islamabad, 12th July, 2017

Kenshiro Tanaka	Raja Nowsherwan	Yukio IGO
Leader	Person in Charge	Project Manager
Consultation and	Member (Planning)	JICA Expert Team
Monitoring Mission	NHA	
JICA		

Attachment

1. Actions to be taken

A Joint Working Group (hereinafter referred to as "JWG") meeting shall be held within days under the supervision of Member (Planning) in order to discuss the BMS implementation structure.

The Expert Team shall prepare a comprehensive implementation plan for NHA by referring to the experiences and the concrete example of Japan.

The Expert Team and Mr. Muhammad Asif Azam, Deputy Director shall prepare a detailed plan of the whole institutional framework of Bridge Management Unit (hereinafter referred to as "BMU") by providing required number of persons, job descriptions and roles and responsibilities of each persons in BMU.

2. Issues

2.1 Main Activities and Progress in the past 6 months

Mr. Kenichi Tomi, a Project Monitoring Expert of the Expert Team, presented the main activities and the progress of the Project in the past 6 months (Refer to annex-2, #1).

(1) Main activities

- DD (Structures) and DD (BMS) visited Japan in January 2017 for a period of 2 weeks to acquire Japanese experience and knowledge of bridge management.
- 65 candidates of master trainers from all twelve offices in whole of Pakistan and NHA HQ (refer to annex-2, #3) attended (one week), the 1st Master Trainer Training (MTT) in 3 sessions held at HRTC, Burhan during February 27th to March 17th, 2017. In the training, crack scales, test hammers and helmets were provided to all the participants.
- Bridge Inspection and repair manuals have been drafted. However, the manual for data input to Bridge Database shall be drafted along with the introduction of Bridge Inspection Database (BIDB) prototype in December 2017.
- The Expert Team requested the trainees to submit 10 sets of bridge inspection sheets if he/she belonged to Maintenance Unit or 3 sets if not.
- The Expert Team only collected 58 bridge/culvert inspection sheet from 17 trainees.

(2) Progress

- The prototype of data input to bridge inspection database software would be developed in July for the trial uses by the 1st MTT trainees.
- The prototype of BMS software was under development and its trail uses would be carried out in December, 2017.

- Bridge Inspection & Repair Manuals and Training Materials would be revised by November, 2017 under the collaboration between some trainees and the Expert Team.
- Even if 100 bridges and 200 culverts would be additionally inspected (Refer to Minutes of JWG Meeting dated May 19th, 2017), the progress as of November would be 1.70% of 5,000 bridges and 16,000 culverts (total 21,000) in NHA which were planned to be inspected by June, 2018 in order to achieve the project purpose.

2.2 Organization for Bridge Inspection and BMS

(1) Workforce for bridge inspection

- Mr. Yukio Igo, Project Manager/Bridge Inspection Expert of the Expert Team expressed that NHA did not have enough personnel for bridge inspection works and that this was one of the reasons why the ex-bridge inventory data could not be effectively utilized and updated. The Expert Team proposed an alternative option to outsource bridge inspection to local consultants in order to fulfill project purpose and reach the overall goal (Refer to annex-2, #1 & #2 & #3).
- Member (Planning) agreed with the insufficiency, but disagreed to hire a local consultant because hiring a consultant would not develop in-house capacity of NHA Engineers. He expressed his opinion that NHA required a need-based self-sustainable bridge management system Moreover, he suggested to evaluate the option of hiring Trainee Engineers for bridge inspection who would work for BMS RAMD.
- He also proposed that it would be decided later that whether NHA engineers would do 100% of inspection or partial inspection would be done through outsourcing.

(2) Organization for bridge management

- DD BMS presented the idea of establishing Bridge Management Unit (BMU) in RAMD NHA comprising of 3-5 engineers who would work for BMS on full-time basis.
- Member (Planning) directed DD (BMS) to prepare a comprehensive proposal describing the institutional framework of BMU along with the roles and responsibilities of each person in BMU.

(3) Requests for the organization for bridge inspection and BMS

- Member (Planning) asked the Expert Team to present the organizational arrangement for implementation of BMS in Japan and to prepare a comprehensive implementation plan for NHA. He proposed to hold JWG meeting in his office to discuss the BMS implementation structure.
- Mr. Tanaka, Senior Officer from JICA HQ, mentioned that our main focus should be on establishment of efficient bridge management organization to achieve overall goal in years to come. He expressed that JICA was ready to discuss issues on extension or modification of the Project (if required) in order to establish new organizational structure in NHA to make the BMS self-sustainable

3. Future Activities

- 2nd MTT, December, 2017
- Training in Japan, April 2018 (Refer to attachment #4).

- Comments;
  - ✧ Inclusion of other NHA engineers is necessary for the next training. (Member (Planning))
  - ✧ Workshops of bridge inspection works shall be more effective for attendance from NHA engineers, consultants and academics than seminars. (Member (Planning))
  - ✧ The comments, attendance and trainings of the future activities such as trainings, workshops and seminars should be consistent with the project objectives i.e. to establish self-sustainable BMS in NHA. (JICA HQ)

END

Annex-1:

List of Attendees

Annex-2:

(Handouts for the 3rd JCC)
Agenda
#1 Project Monitoring Sheets
#2 Questionnaire Summary
#3 Results of Mater Trainer Training
#4 Project Schedule
#5 JICA Scholarship for BMS

Annex-1

List of Attendees

1. NHA Side

No.	Name	Organization	Position
1	Raja Nowsherwan	NHA HQ	Member (Planning)
2	Asim Ameen	NHA HQ	General Manager (Design)
3	Muhammad Asif Azam	NHA HQ	Deputy Director (Bridge Management System / Road Asset Management System)

2. JICA Side

No.	Name	Organization	Position
1	Kenshiro Tanaka	JICA HQ	Leader, Consultation and Monitoring Mission
2	Kazuho Ujiie	JICA Pakistan Office	Representative
3	Naila Almas	JICA Pakistan Office	Senior Program Officer

3. JICA Expert Team

No.	Name	Organization	Position
1	Yukio Igo	JICA Expert Team	Project Manager/Bridge Inspection Expert
2	Haruo Tomiyama	JICA Expert Team	Capacity Development Expert
3	Kenichi Tomi	JICA Expert Team	Project Monitoring Expert
4	Akio Mori	JICA Expert Team	BMS Expert
5	Fumiatsu Kamitani	JICA Expert Team	BMS Expert
6	Ryou Nakai	JICA Expert Team	BMS Expert
7	Momina Rauf		Local Administrator

Annex-2

(Handouts for the 3rd JCC)

Agenda

#1 Project Monitoring Sheets

#2 Questionnaire Summary

#3 Results of Mater Trainer Training

#4 Project Schedule

#5 JICA Scholarship for BMS

AGENDA

JCC-3 on the 12th of July, 2017

0. Introduction

Time: 11:00-11:10
Opening remarks by Member (Planning)
Self-introduction by the new JCC members

1. Progress of the Project in the past 6 months

Time: 11:10-11:30
By Mr. Tomi (Project Monitoring) and Mr. Asif (Project Coordinator)

2. Prospective Progress in the coming 6 months

Time: 11:30-11:45
By Mr. Asif (Project Coordinator) and Mr. Igo (Bridge Inspection)

3. Delay Risks and/or Problems and/or Solutions

Time: 11:45-12:00
Discussion on issues among JCC
Cooperatively facilitated by Mr. Igo and Mr. Asif

4. Modification of the Project Implementation Plan

Time: 12:00-12:15
Conclusion on issues among JCC
Declaration of proposals by JCC if PDM amendments are necessary
Cooperatively facilitated by Mr. Igo and Mr. Asif

5. Others

Time: 12:15-12:30
Scholarship Program in Bridge Sector, explained by JICA
Posters and Brochures of the project, explained by Experts Team

6. Adjournment

(7) JWG with Member (Planning)_2017/7/21

MINUTES OF MEETINGS
OF
JOINT WORKING GROUP
ON
THE PROJECT FOR TECHNICAL ASSISTANCE ON IMPLEMENTATION OF BRIDGE MANAGEMENT SYSTEM IN NHA

Joint Working Group (hereinafter referred to as "JWG") meeting on the Project for Technical Assistance on Implementation of Bridge Management System in NHA (hereinafter referred to as "the Project") was held on the 21st July,2017 with attendance of JWG members representing the National Highway Authority (hereinafter referred to as "NHA") and members of the JICA Experts (hereinafter referred to as "the Experts") to discuss about the Project.
As a result of the discussions, JWG members mutually discussed the issues as follows;

Islamabad, 21st July,2017

Raja Nowsherwan Member (Planning) National Highway Authority Islamic Republic of Pakistan	Yukio IGO Project Manager JICA Expert

Minutes of Meeting of JWG

Date &Time	July 21st ,2017 10:00-11:15
Attendance	**NHA** Mr. Raja Nosherwan/ M (Planning), Mr. Asim Ameen/GM (Design), Mr. Muhammad Asif Azam/DD(RAMS/BMS) **JICA Experts Team** Mr. Yukio Igo, Mr. Haruo Tomiyama, Mr. Kenichi Tomi, Ms. Momina Rauf
Venue	Room of Member (Planning)
Document	BMU (by JICA Expert)
Outline	✓ Discussion on Institution/Organization for BMS
Discussion	Mr. Yukio Igo, presented the proposal for BMS organization structure in NHA. The points discussed in meeting are as follows: • NHA requires at least 178 inspectors based on BMS experience in Japan who collect all bridge inspection data once in 5 years for BMS. • It is impossible for NHA to inspect all the 21,000 bridges and culverts within this Project unless otherwise NHA prepares at least 178 Bridge Inspectors (Trainee Engineers), 47 Deputy Director and 47 Assistant Director at each Maintenance Unit, 12 Directors at each regional office and 3 BMS engineers at HQ exclusively for bridge maintenance in NHA. • It is proposed that the model area for bridge inspection and the model regions for bridge inventory are set for phase 1 and that the experience built in those will encourage to expand bridge maintenance to the other regions in sequence. • Member (Planning) did not agree to the idea of getting 20% of bridges as a model. As per his suggestion, a model area comprising of 100 bridges and 200 culverts can be established now and this work is to be done by newly hired trainee engineers. Meanwhile, the system should be introduced at all the regional offices simultaneously for hiring of new trainee engineers. The hiring can be made either by arranging walk-in interviews or by getting them from consultants. Even those who are hired may quit NHA, but they will definitely work in Pakistan and ultimately will contribute to capacity development of BMS in Pakistan. • The CMTs may not train the new engineers so it is better that newly recruited engineers be trained by JICA Experts. Moreover, the role of CMTs is not clear yet and it is to be decided by JICA and NHA after finalization of the implement plan. • This project may fail if the system is not set up simultaneously in whole organization of NHA (HQ, RO & MU). There should be no phases and all provinces must initiate BMS system at the same time. • Member (Planning) instructed DD (BMS) to prepare a case for hiring Trainee Engineers as “Bridge Inspection Engineers” on contract basis for

	inspection of all bridges on NHA network. • He also directed DD (BMS) to prepare an estimation of the required budget and may obtain the assistance of NHA finance section for this purpose.

(8) MM with Chairman and Member (Planning)_ 2017/11/10

THE PROJECT FOR TECHNICAL ASSISTANCE ON IMPLEMENTATION OF BRIDGE MANAGEMENT SYSTEM IN NHA

MINUTES OF MEETINGS
OF
MEETING AT JICA HEADQUARTERS

The meeting of "the Project for Technical Assistance on Implementation of Bridge Management System in NHA (hereinafter referred to as the "Project")" was held on 10th of November 2017 at JICA Headquarters with attendance of the representatives of the National Highway Authority (hereinafter referred to as "NHA"), Japan International Cooperation Agency (hereinafter referred to as "JICA") and members of the JICA Expert Team (hereinafter referred to as the "Expert Team") to discuss the organization including human resources to be appointed for the Project.

As a result of the discussions, the details are shown as follows, that were mutually accepted by attendees.

Tokyo, 10th November, 2017

Asim Amin
General Manager (Design)
National Highway Authority

Ikramus Saqlain Haider
General Manager (RAMD)
National Highway Authority

Tomoki KANENAWA
Director
Team1,Transportation and ICT Group
Infrastructure and Peacebuilding Department
JICA

Yukio IGO
Project Manager/Bridge Inspection
JICA Expert Team

Subject: **MINUTES OF MEETING**
The Project for Technical Assistance on Implementation of Bridge Management System (BMS) in NHA

1. A meeting was held on 10th November 2017 at JICA Headquarters, Japan to discuss the issues pertaining to Technical Assistance on Implementation of Bridge Management System (BMS) in National Highway Authority Pakistan. Following have attended the meeting:

National Highway Authority

i.	Shahid Ashraf Tarar	Chairman NHA
ii.	Raja Nowsherwan	Member (Planning)
iii.	Asim Amin	General Manager (Design)
iv.	Ikramus Saqlain Haider	General Manager (RAMD)
v.	Mirza Salman Babar Beg	Deputy Chief of Mission, Embassy of Pakistan in Japan

Japan International Cooperation Agency (JICA) Officials, JICA HQ

i.	Tomoki Kanenawa	Director, Team1, Transportation and ICT Group Infrastructure and Peacebuilding Department
ii.	Masahiro Suzuki	Assistant Director, South Asia Division-2 (Pakistan/Afghanistan), South Asia Department
iii.	Nobuyuki Tsuneoka	Senior Advisor
iv.	Kazunobu Takahashi	Team1, Transportation and ICT Group Infrastructure and Peacebuilding Department
v.	Naila Almas	Senior Program Officer, JICA Pakistan Office

Japan International Cooperation Agency (JICA) Expert Team

i.	Yukio Igo	Project Manager/Bridge Inspection Expert
ii.	Haruo Tomiyama	Capacity Development Expert
iii.	Kotoko Yoneda	Program Coordinator Expert

2. During the meeting, JICA Expert deliberated on the concept of Technical Assistance for establishment of Bridge Management System (BMS), what are the current challenges, what is the future strategy and current organizational structure required for running of BMS in NHA.

3. Chairman NHA agreed with the suggestions made by the JICA Expert Team and ensured full support for the BMS concept and confirmed that NHA will provide the necessary organizational structure required for running BMS in NHA. Following points were discussed and deliberated at length and decisions were made which are:

Sr. No.	Matter Discussed	Action to be Taken by
i.	NHA will arrange the below mentioned organization for BMS by 1st December 2017:	
	a. 03 x engineers at Bridge Management Unit (hereinafter referred to as "BMU") in NHA HQ. The engineers for BMU will be selected from the candidates of Certified Master Trainers and will work dedicatedly for BMU.	Member (Planning) and GM (RAMD) to get 03 x Engineers placed in BMU after approval of Chairman NHA.
	b. 12 x Inspectors to begin with the inspection of model area. Chairman NHA agreed with the concept that Yes we will do a short-term model section analysis for which Punjab-North was agreed as the candidate region. It was further agreed that 12 x trainee engineers already working on different NHA projects will be selected and placed in BMU to work as Inspector for short-term data collection team.	Member (Planning) and GM (RAMD) to get 12 x trainee engineers selected and placed in BMU as inspectors for short-term model section analysis.
	c. Chairman NHA also directed that complete network analysis cannot be ignored and after three to four months time, 01 x Assistant Director and 01 x Inspector (one team) per two contiguous maintenance units will be placed. This arrangement will be further strengthened after availability of more human resource.	Member (Planning) and GM (RAMD) to get 01 x Assistant Director and 01 x Inspector (one team) per two contiguous maintenance units.
ii.	The Expert Team will inform NHA about the specifications of the required server for BMS, and NHA will confirm the availability of their current server or otherwise NHA will request JICA Expert Team to provide a server for the assignment.	JICA Expert Team

4. The meeting ended with vote of thanks to JICA for arranging such a great educational / informative visit to Japan which enabled NHA officials to acquire knowledge of BMS best practices.

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(9) JCC-4_2017/12/13

MINUTES OF MEETINGS
OF
4th JOINT COORDINATION COMMITTEE
ON
THE PROJECT FOR TECHNICAL ASSISTANCE ON IMPLEMENTATION OF BRIDGE MANAGEMENT SYSTEM IN NHA

Joint Coordination Committee (hereinafter referred to as "JCC") meeting on the Project for Technical Assistance on Implementation of Bridge Management System in NHA (hereinafter referred to as "the Project") was held on the 13th of December, 2017 with attendance of JCC members representing the National Highway Authority (hereinafter referred to as "NHA"), the Japan International Cooperation Agency (hereinafter referred to as "JICA") and members of the JICA Experts (hereinafter referred to as "the Experts") to discuss schedule and progress of the Project based on the 4th Project Monitoring Sheet submitted by the Experts on the 13th of December, 2017.

As a result of the discussions, JCC members mutually accepted the issues as follows;

Islamabad, 13th December,2017

Asim Amin
Member (Planning)
National Highway Authority
Islamic Republic of Pakistan

Yukio IGO
Project Manager
JICA Expert

Actions to be taken

- NHA will issue the posting order of members of BMU by 18th December '17.
- Trainee Engineers will be available for Inventory Survey Training by 19th December so that Inventory Survey Training is conducted by 20th December '17.

Issues

Overview of presentation

Mr. Kenichi Tomi (Project Monitoring Expert) explained the progress of the project in the past 6 months (Refer to attachment #1). The major points of presentation were as follows;

- JICA Experts suggested NHA organization plan for BMS, which includes short term and long-term vision. Long term vision consists of a Bridge Management Unit (BMU) setup at NHA HQ, Director/DD at Regional Office level and Assistant Directors and Inspectors at Maintenance Unit level in whole NHA network. This will be implemented later.
- Short term vision consists of a BMU setup and 12 inspectors/trainee engineers at HQ who will conduct inventory survey and bridge inspection in the model area (Punjab North). This plan was also agreed by the ex-Chairman NHA in meeting on 10th November'17 at JICA Headquarters, Tokyo.

Establishment of BMU and Allocation of Trainee Engineers

Member (Planning) assured that BMU consisting of 3 engineers from candidates of Master Trainers will be posted to NHA HQ on Monday 18th December and selected trainee engineers will report to JICA Experts on Tuesday 19th December for inventory survey training.

Inventory Survey Training

One day Inventory Survey Training will be conducted on or before 20th December'17. BMU and MTs from Punjab North should attend the training.

Introduction to BMS Software

Mr. Akio Mori presented the features of BMS and BIDB software. The main points of his presentation were as follows;

- BMS software can store data, perform calculations, create inspection plan list and carry out prioritization. The whole data can be accessed by HQ Staffs but MTs of ROs can access only the data of bridges in their respective jurisdiction.
- BIDB is mainly used by MTs and inspectors for inputting bridge inventory, inspection data, and repair job data. Input data are checked by MTs and BMU, and registered to BMS software.
- BMS and BIDB are open source software and source code will be given to NHA.

NDT Equipment

Test hammers, crack scales and safety helmets have been provided by JICA Experts during 1st MT Training. However, the major NDT equipment will be handed over to NHA once the staff in charge for NDT equipment is decided. NHA will decide the type and number of NDT equipment as per its requirement

Attached Documents

1. List of Attendees
2. Agenda
3. Presentation for the 4th JCC Meeting
4. Project Monitoring Sheet version 4

Attachment-1

List of Attendees

1. **JICA Side**

Sr.No.	Name	Position
i	Kazuho Ujiie	Representative
ii	Naila Almas	Senior Program Officer

2. **NHA Side**

Sr.No.	Name	Position
i	Asim Amin	Member (Planning)
ii	Muhammad Asif Azam	DD (RAMS/BMS)
iii	Aftab Ullah Babar	DD Structures

3. **JICA Experts Side**

Sr.No.	Name	Position
i	Yukio IGO	Project Manager/Bridge Inspection Expert
ii	Kenichi TOMI	Project Monitoring Expert
iii	Haruo Tomiyama	Capacity Development Expert
iv	Akio Mori	BMS Expert
v	Ryou Nakai	BMS Expert
vi	Kotoko Yoneda	Project Coordinator
vii	Momina Rauf	Local Administrator

AGENDA

JCC-4 on December 13th, 2017

1. **Introduction**

   Time: 14:00 -14:10
   Opening Remarks by Member (Planning)

2. **Progress of Activities**
   Time 14:10-14:20
   Mr. Tomi (Project Monitoring Expert) and Mr. Asif (Project Coordinator)

3. **Challenges for BMS in NHA**
   Time: 14:20-14:30
   By Mr. Igo (Project Manager) and Project Coordinator (Mr. Asif)

4. **Issues**
   Time: 14:30-14:50
   Discussion on issues among JCC Members
   - Long term and short term vision
   - Establishment of BMU
   - Selection of Trainee Engineers for Model Area
   - Selection and Inspection Scope of Model Area
   - Introduction to BMS Software

5. **Others**
   Time: 14:50- 15:00
   Mr. Igo (Project Manager) and Mr. Asif (Project Coordinator)

6. **Conclusion**
   Time: 15:00-15:15
   Conclusion on issues among members of JCC

7. **Adjournment**

(10) MM with Chairman_2018/2/27

Minutes of Meeting

Date and time	11:20am on 27th February,2018
Attendance	**NHA** Mr. Jawwad Rafique Malik (Chairman NHA) Mr. Asim Amin (Member Planning) Mr Ikramus Saqlain Haider (GM RAMD) Mr. Asif (GM Administration) Mr. M. Asif Azam (DD BMU) **JICA** Ms Kazuho Ujjie **JICA Expert Team** Mr. Yukio Igo Ms. Momina Rauf
Document	None
Outline	✓ Sustainability of BMS in NHA ✓ Issue of transfer of DD BMU
Discussion	The points discussed in the meeting with their conclusion are as follows • Member Planning, GM (RAMD) and Mr. Asif (DD BMU) made a presentation on the progress of activities in the project and issue of shortage of human resources in NHA. NHA has some vacant seats allocated for DDs ADs and Inspectors that can be used for hiring dedicated staff for BMS. • It was told to the Chairman NHA that existing inspectors cannot be assigned the tasks associated with BMS as this is a tedious job, so new hiring is recommended. • Chairman NHA instructed GM (Administration) to start recruitment of 49 Assistant Directors and 49 Inspectors on permanent basis as it was already committed by Ex- Chairman NHA. • Mr. Asif (DD BMU) will prepare a case for recruitment and forward this to Administration wing of NHA. • Chairman NHA ensured that BMU has been established permanently and not just for this project, thus BMU will keep on working even after completion of the Project. • Member (Planning) and GM (RAMD) proposed few officers that may be transferred to P&CA Wing in place of Mr Sohaib (DD BMU), who was recently transferred to P&CA, hence, Chairman instructed GM (Administration) to take back the transfer orders and appoint some other officer to P&CA wing of NHA.

(11) MM with GM (RAMD)_2018/3/12

Minutes of Meeting

Date and time	3:30pm, March 12th, 2018
Attendance	NHA Mr. Asim Amin (Member Planning/Person in Charge) Mr. Ikramus Saqlain Haider (GM RAMD/ Project Director) Mr. Muhammad Asif Azam (DD BMU) Mr. Ghulam Murtaza Simair (DD BMU) Mr. Sohaib Mansoor (DD BMU) JICA Expert Team Mr. Haruo Tomiyama, Ms. Momina
Document	None
Outline	✓ Presentation on Progress of Progress and BMS Software
Discussion	The points discussed in the meeting with their conclusion are as follows; • GM RAMD insisted that NHA must have enough time before the last visit of JICA Experts, to test and validate the BMS software. For that, bridge inspection data is required, so Bridge Inspection must start in parallel with inventory survey as it will save time and resources The inspection training which is now scheduled from April 16th to April 20th should be held as early as possible. Member Planning agreed to start inspection along with Bridge Inventory survey. • The bridge inspection sheet should be made user friendly as per the suggestion of GM. However, the Bridge Management Unit supported that the bridge inspection sheet is not so difficult and all the evaluation guidelines are given in bridge/culvert inspection manual. • The hiring of permanent new staff is in process. The responsible person from NHA side, has been instructed to prepare the case as per standard recruitment procedures in NHA. On the other hand, GM RAMD does not recommend new hiring and he believed that after the project, BMU will be capable enough to train the consultants hired by NHA for Bridge Inspection in future. • It is NHA's responsibility to make strategy about sustainability of BMS in future and NHA will decide about how it will keep the BMS functional and sustainable in upcoming years.

(12) JCC-5_2018/4/11

MINUTES OF MEETINGS
OF
5TH JOINT COORDINATION COMMITTEE
ON
THE PROJECT FOR TECHNICAL ASSISTANCE ON IMPLEMENTATION OF BRIDGE MANAGEMENT SYSTEM IN NHA

Joint Coordination Committee (hereinafter referred to as "JCC") meeting on the Project for Technical Assistance on Implementation of Bridge Management System in NHA (hereinafter referred to as "the Project") was held on the 11th of April, 2018 with attendance of JCC members representing the National Highway Authority (hereinafter referred to as "NHA"), the Japan International Cooperation Agency (hereinafter referred to as "JICA") and members of the JICA Experts (hereinafter referred to as "the Experts") to discuss schedule and progress of the Project based on the 5th Project Monitoring Sheet submitted by the Experts on the 11th April, 2018.
As a result of the discussions, JCC members mutually accepted the issues as follows;

Islamabad, 11th April, 2018

Mr. Shuntaro Kawahara	Mr. Asim Amin	Mr. Yukio IGO
Mission Leader	Member (Planning)	Project Manager / Bridge
JICA Headquarter	National Highway Authority	Inspection
Japan	Islamic Republic of Pakistan	JICA Expert

Actions to be taken

1. NHA must make BMS implementation strategies with the timeline. As it will be shown in brochures, posters and website.
2. NHA cannot confirm the timeline of official establishment of nationwide BMS organization because of some legal conflict within NHA. Once the matter is solved, NHA will gradually establish a dedicated BMS organization throughout its network.
3. NHA will prepare Standard Operating Procedures (SOP) to implement BMS through Bridge Management Unit (BMU).

Issues

Opening remarks by GM RAMD

GM RAMD expressed gratitude to JICA for the technical assistance grant. He added that some targets of the Project have been achieved so far while rest of the targets are yet to be accomplished and NHA has shown strong commitment towards the Project. He asked that a proper functioning BMS Software should be shown to NHA so that the deficiencies and other issues in software must be tackled.

Progress of the Project (after JCC-4)

Mr. Kenichi Tomi, Project Monitoring Expert explained the progress of the Project after JCC-4 (Refer to attachment #1).
The major points of his presentation were as follows:

- JICA experts have conducted Inventory survey training and updated the draft Bridge Inspection and Bridge Repair manuals for BMS Staff;
- BMU comprising of 3 engineers has been established by NHA;
- 10 Trainee Engineers (TEs) have been hired by NHA for collection of bridge inventory and start collecting inspection data. Out of 516 structures 322 structures have been inventoried;
- 100 sets of safety helmets, crack scale and test hammer have been provided by JICA;
- After the two- engineers training in Japan and 1st MT Training, the next training in Japan has been cancelled due non-selection of Master Trainers.
- Inventory Survey Training for TEs was held on 1st, 2nd and 14th February, 2018.

BMS Software

GM RAMD was updated about the status of BIDB and BMS excel-based prototype by Mr. Mori. GM RAMD suggested that a proper functioning BMS should be shown to NHA as early as possible and the validity of BMS may be checked by dummy data (as actual data is not available), so that the deficiencies and other issues in software must be identified and tackled on time. However, Mr Igo told that the programming of actual BMS Software is in advanced stage and during programming, any change or additional feature of software will be difficult to be incorporated. Thus, NHA must decide about networking and features related to prioritization in BMS.

Equipment

Mr. Asif delivered a presentation emphasizing need of an Under-Bridge Inspection Truck (UBIT) for bridge inspection. As a significant number of bridges are constructed either on water ways or have height >5m, they are difficult to be inspected by conventional equipment. JICA Mission assessed the requirement of UBIT, however, UBIT cannot be provided by JICA due to shortage of funds. Also, the procurement of a UBIT will take more time than the remaining duration of this Project.
Member Planning decided that NHA will arrange all the NDT equipment for bridge inspection by its own resources.

Nationwide implementation of BMS

As short-term plan is in execution, meanwhile timeline for nationwide implementation of BMS should be confirmed by NHA. GM RAMD expressed his reservation over the matter of hiring of new BMS Staff. NHA is already facing some legal problems and it is impossible for NHA to commit or decide the deadline of hiring of new staff exclusively for BMS. For now, the inspectors and Assistant directors from MU and RO of Punjab North will receive the training under the Project and NHA will gradually expand the scope and establish the BMS.

Amendment in Record of Discussion (RD)

GM RAMD suggested to make minimum amendment in RD if required. The Project must remain closer to the initial idea to which Ministry of Communications, Ministry of Economic Affairs and Statistics and JICA also agreed. The Master Trainer concept and reduction in scope of the Project from entire NHA network reduced to model area will be changed.

Appendix A
List of Attendees

Attachments
Project Monitoring Sheets

END

Appendix A

List of Attendees

1. NHA Side

No.	Name	Organization	Position
1	Asim Amin	NHA HQ	Member (Planning)
2	Ikramus Saqlain Haider	NHA HQ	GM (RAMD)
3	Ghulam Murtaza Simair	NHA HQ	DD (BMU)
4	Sohaib Mansoor	NHA HQ	DD (BMU)
5	Muhammad Asif Azam	NHA HQ	DD (BMU)

2. JICA Side

No.	Name	Organization	Position
1	Shuntaro Kawahara	JICA HQ	Mission Leader
2	Kazunobu Takahashi	JICA HQ	Planning Coordinator
3	Kazuho Ujiie	JICA Pakistan Office	Representative
4	Naila Almas	JICA Pakistan Office	Senior Program Officer

3. Experts Side

No.	Name	Organization	Position
1	Yukio Igo	JICA Expert Team	Project Manager/Bridge Inspection Expert
2	Haruo Tomiyama	JICA Expert Team	Capacity Development Expert
3	Kenichi Tomi	JICA Expert Team	Project Monitoring Expert
4	Akio Mori	JICA Expert Team	BMS Expert
5	Kayo Yonezawa	Pacific Consultant	Engineer
7	Momina Rauf	JICA Expert Team	Local Administrator

(13) Main Points Discussed and PDM Amendment_2018/4/13

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

Japan International Cooperation Agency (herein after referred to as "JICA") dispatched Mission (hereinafter referred to as "the Mission") headed by Mr Shuntaro Kawahara from 8th April to 13th April 2018, for the purpose of discussing amendment of Record of Discussions on "The Project for Technical Assistance on Implementation of Bridge Management System in NHA" originally signed on July 8th, 2015 and once amended on February 8th, 2017.

During its stay in Islamic Republic of Pakistan, the Mission exchanged views and opinions with National Highway Authority (NHA).

As a result of the discussions, both parties confirmed the matters referred to in the document attached hereto.

Islamabad, April 13, 2018

Mr. Shuntaro Kawahara
Mission Leader
Japan International Cooperation Agency
Japan

Mr. Asim Amin
Member (Planning)
National Highway Authority
Islamic Republic of Pakistan

Attachment

Main Points Discussed

1. Amendment of PDM & PO

Both sides agreed on the draft of amendment of Project Design Matrix (PDM) and Plan of Operation (PO) as shown in Annex 1 and 2 respectively considering present progress of the Project and NHA's human resources allocated to it. The PDM and PO are to be flexibly revised according to the progress and achievement of the Project, upon mutual agreement between National Highway Authority (NHA) and Japan International Cooperation Agency (JICA) at Joint Coordination Committee (JCC) by signing the minutes of meetings.

2. Target Bridges

In order to cover most types of bridges and culverts in NHA, typical [36] bridges and [5] culverts in the model area are selected, in which JICA Expert Team implements Bridge Inspection on-the-job-training (OJT) for BMS staff in NHA.

During the Project, with 10 Trainee Engineers hired for inventory survey and bridge inspection, the accumulated numbers of the data after inventory survey and after inspection in model area are expected to be at least [250] and [41], respectively.

3. Culvert Inspection

Due to the intense request from NHA to include culverts in Bridge Management System (BMS) as well as considering the safety of road users, culverts are included in BMS. However, culverts with clear span length of less than 2.0 m are excluded from Periodical Inspection.

4. BMS Organization

NHA agreed to gradually develop BMS organization in Headquarters, Regional Offices and Maintenance Units in order to make BMS in NHA sustainable even after the Project completion.

5. Bridge Management Unit (BMU)

NHA has established Bridge Management Unit (BMU) in January, 2018. Initially Mr. Muhammad Asif Azam, Mr. Sohaib Mansoor and Mr. Ghulam Murtaza Simair joined BMU. Additionally, NHA will add one IT engineer in BMU. Both sides agreed that NHA will not replace or dismiss the current BMU members until their skills are transferred to new BMU members.

BMU will implement BMS in NHA as per approved Standard Operating Procedure (SOP).

6. Target staff of activity 2-1 & 2-2

The 1st Master Trainer's (MT) Training was conducted for 65 participants at Highway Research & Training Center (HTRC) Burhan during February to March,

2017. OJT has not been implemented because BMS organization was not formed and Master Trainers (MTs) could not be selected.

JICA requested NHA to continuously employ the Trainee Engineers (inspectors) for sustainability of BMS. Both sides mutually agreed to hire 12 Trainee Engineers for the period of 1 year to inspect the structures in the model area. NHA will consider to continue their services if required.

JICA requested NHA to assign BMS staff in Regional Office and Maintenance Units in the model area for the purpose of sustainable BMS in NHA.

NHA will consider to gradually assign BMS staff in Regional Offices and Maintenance Units. Both sides agreed that it is essential to train the assigned BMS staff (formerly considered Master Trainer).

7. Equipment

NHA has requested JICA to provide Non-Destructive Testing (NDT) Equipment and Under Bridge Inspection Truck (UBIT) since the inception of this project. However, JICA explained at JCC meeting that considering the budget constraints and shortage of the remaining project period, UBIT cannot be provided.

For effective implementation of BMS, both sides agreed that NHA will procure the required NDT Equipment, UBIT, computer server and terminals through its own resources.

8. Master Trainer

BMU tentatively takes the role to supervise inspection and to review evaluation in the model area.

9. Project Schedule

The project commenced in July 2016 with original completion in December 2018. Both sides agreed to extend the Project duration until April 2019. As JICA need administrative procedures for almost 3 months, therefore project activities should be ended by December, 2018.

	Action	Responsibility	Timeline	Target
1	Inventory Survey in model area	Inspectors	22nd February to 12th April, 2018	250 Bridges and Culverts
2	Bridge Inspection Manual	BMU / Experts	By the end of April, 2018	
3	Bridge Inspection Training and Planning	BMU / Experts	16th to 20th April, 2018	1 Bridges and 1 Culvert
4	Bridge Inspection in model area	Inspectors	May to July, 2018	Model area including typical [36] Bridges & [5] Culverts
5	Bridge Inspection Evaluation	BMU / Experts	July, 2018	
6	Data Input and BMS trial run	BMU / Experts	July to November, 2018	
7	Final Dispatch of the Experts	-	December, 2018	

Both sides agreed that implementation of Activity 2-1, 2-2 and 2-3, which are bridge inspection, bridge repair method selection, data input to a bridge inspection database and training necessary for such activities, will be scheduled in such a manner so that the planned activities can be implemented smoothly and effectively.

Both sides agreed to complete Activity 2-2 and 2-3 in following schedule;

1)	Inventory Survey Training	Completed in February, 2018
2)	Inventory Survey in model area	by the end of April, 2018
3)	Bridge Inspection Training	16th April to 20th April, 2018
4)	Bridge Inspection in model area	by the end of July, 2018

10. Training in Japan

During the Second Detailed Planning Survey, the Japanese side took note of the request from NHA for trainings in Japan as a component of the Project.

The first training in Japan was carried out for 2 engineers from Road Asset Management Division (RAMD), NHA in January, 2017. The second training in Japan has been canceled due to the reason that no eligible candidate for Master Trainer could be selected by JICA Expert Team after training of 65 NHA engineers in HRTC.

11. Sustainability of the Bridge Management System in NHA

JICA requested NHA to continue bridge maintenance cycle in systematic, programmatic and responsive way after the Project completion. In this connection, followings should be prepared.

(1) Nationwide implementation of BMS

As short-term plan is in execution, meanwhile timeline for nationwide implementation of BMS should be confirmed by NHA.

(2) Standard Operating Procedures (SOP)

For successful implementation of BMS in NHA, SOP is required to be prepared which must clearly define roles and responsibilities of each individual under BMS organization. In addition, NHA will get the necessary approval of 3 manuals (Bridge Inspection, Repair, and Data Input) and SOP from competent forum such as NHA Executive Board.

(3) Composite Schedule of Rates (CSR) for repair / maintenance jobs

NHA will prepare a set of unified rates for each repair / maintenance job defined in Bridge Repair Manual with the assistance of JICA Expert Team.

Annex 1 : The draft of the amendment of the Project Design Matrix (PDM)

Annex 2 : The draft of revised PDM

Annex 3 : Plan of Operation (PO)

Annex 4 : Minutes of Meetings at JICA Headquarters (signed November 10th, 2017)

Annex1

The draft of the amendment of the Project Design Matrix (PDM)

(1)Overall Goal

Before	Amended Version
Overall Goal	
Bridge maintenance status improved on the bridges of National Highways in Pakistan.	Bridge inspection & maintenance status improved on the bridges of National Highways in the model area.
Reason: 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. The model area means jurisdiction of Rawalpindi MU and Wazirabad MU in Punjab North.	
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.	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.
Reason: We defined improvement of maintenance status as sustainable revision of bridge maintenance plan and repair of identified bridges according to the plan.	
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.
Reason: 1) Specify the types of the BMS outputs 2) "Bridge maintenance plan" is added from the viewpoint of BMS sustainability in NHA.	
Important Assumption	
· Copyright of software (source code) · Availability of optimum maintenance budget. · Continuous update of bridge data	
Reason: Added to achieve Overall Goal. Budget allocation, which is affected by policy priority and major disasters, is the most critical constraint for bridge improvement.	

(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 the model area.
Reason: 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, 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 10th, 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 the model area 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 10th, 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 method selection	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/culvert inspection, (2) bridge repair method selection by [December, 2016] and draft manual for (3) data input to Database & BMS 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 for the master trainers for (1) bridge/culvert inspection and (2) bridge repair method selection developed by [December, 2016].	1-4. 2 types of draft training materials for (1) bridge/culvert inspection 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/culvert inspection, (2) bridge repair method selection and (3) data input to Database. 1-2. Develop draft bridge/culvert inspection formats. 1-3. Develop prototype Database & BMS. 1-4. Develop 2 types of draft training materials for training i.e. (1) bridge/culvert inspection 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 JICA Expert Team develops draft manuals for (1) bridge/culvert inspection, (2) bridge/culvert repair and (3) data input. 1-2 JICA Expert Team develops draft bridge/culvert inspection formats. 1-3 JICA Expert Team develops Prototype Bridge Inspection Database & BMS. 1-4 JICA Expert Team develops draft training materials for (1) bridge/culvert inspection and (2) bridge/culvert repair. 1-5 BMU 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	
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.	Bridge/culvert inspection in the model area is implemented after BMS training.
Reason: Clarify the practitioner in charge. Simplify the expression.	
Objectively Verifiable Indicators	
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]. 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]. 2-3. Bridge/culvert inspection, bridge repair method selection, and data input to Database completed for all NHA bridges by [June, 2018]. 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]. 2-5. Certification of master trainers after training by JICA experts (scoring more than 80% in capacity test).	2-1 On-the-job-training (OJT) by JICA Expert Team which enables BMU to implement BMS in NHA by [December, 2018]. 2-2 Inventory Survey, Bridge Inspection and Data Input Training for NHA engineers. 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]. 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].
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).	2-1 JICA Expert Team provides on-the-job-training (OJT) which enables BMU to manage BMS training in NHA.
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.	2-2 BMU implements BMS training (Inventory Survey Training and Bridge Inspection Training).
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).	2-3 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). 3-2. 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. 3-3. Prepare the annual bridge/culvert maintenance plan including estimated budget for 2019 based on the data transferred to BMS (Activity 3-2).	3-1 JICA Expert Team implements BIDB & BMS Software Training for BMU. 3-2 BMU analyzes Bridge Inspection Data of the model area included in database using BMS Software. 3-3 BMU prepares the annual bridge/culvert maintenance plan including budget estimation based on the analysis of registered data in Bridge Inspection Database
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 · Crack Depth · Rebar Arrangement · Rebar & Cover · Rebar Corrosion · 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 Director (Design) Counterpart Personnel 1) Project Coordinator: Deputy Director (BMS) 2) Assistant Project Coordinator: Assistant Director (BMS)	Administrative Personnel 1) Person in Charge: Member (Planning) 2) Project Manager: General Manager (RAMD) 3) Project Coordinator: Deputy Director (BMU)- Ⅰ Counterpart Personnel Deputy Director (BMU)- Ⅱ Deputy Director (BMU)- Ⅲ
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.	

(5)Pre-Conditions

Pre-Conditions	Amended Version
Pre-Conditions	
· 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.	(delete) · Pakistan, especially Islamabad and Lahore, is continuously safe enough for JICA Expert Team to implement the activities.
Reason: Internal issues in NHA Unification of terms	

This amendment will become effective as of April, 13, 2018.

(14) MM with GM (RAMD)_ 2018/6/28

Minutes of Meeting

Date	June 28th, 2018
Attendance	NHA • Mr. Ikramus Saqlain Haider/GM(RAMD) • Mr. Muhammad Asif Azam/DD(BMU) • Mr. Sohaib Mansoor/DD(BMU) JICA Experts • Mr. Yukio Igo • Ms. Momina Rauf
Document	None
Outline	✓ Discussion on To Do List for BMS Project
Discussion	The points discussed in the meeting with their conclusion are as follows • Inspection of 31 bridges has been done by Trainee Engineers. 5 bridges and 5 culverts are remained. GM RAMD instructed to finish the remaining inspection as soon as possible before the monsoon starts. • BMU should take prior approval of inspection schedule of trainee engineers. • GM RAMD instructed to immediately follow up the procedure for procurement of new computers for BMS project. It has been suggested that after availability of required computers, 2 laptops will be terminal PCs while 2 will be used for data entry. • Mr. Asif told that server (along with accessories) will be made ready before 31st July. GM insisted that server must be made ready by next week. • Mr. Sohaib and Mr. Simair are working on Standard Operating Procedures (SOP). It will be prepared within 15 days from now. • BMU cannot prepare CSR. GM RAMD will discuss about it with Member Planning. • GM RAMD asked to wait for brochure and posters

(15) MM with GM (RAMD)_ 2018/8/10

Minutes of Meeting

Date	August 10,2018
Attendees	JICA Expert Team Yukio Igo/ Project Manager Akio Mori/ BMS Expert Momina Rauf /Local Administrator NHA Ikramus Saqlain Haider /GM (RAMD) Sohaib Mansoor /DD(BMU) Ghulam Murtaza Simair /DD(BMU) Asif Azam /DD (BMU)
Discussion	• 2 laptops are reached at computer bureau. They are waiting for receiving of laptops. Another one laptop is with Mr. Ashfaq GM RAMD instructed BMU to check if that laptop is good enough for use. • GM RAMD said that outsourcing the bridge inspection is not a reliable option as authenticity of data collected by outsourcing cannot be ensured. NHA will arrange hiring the trainee engineers permanently. • The TEs were sent to Lahore MU for carrying out inventory survey in 3 groups out of which only 1 group got transport vehicle and carried out inventory survey. The groups are ordered to come back and GM RAMD will arrange transportation for them from NHA HQ. • Interviews for 4 more trainee engineers will be conducted in a couple of weeks. Currently 8 trainee engineers are continuing their job IN NHA. • GM RAMD asked BMU to prepare a proposal for purchase of 4 survey vehicles exclusively for BMS in RAMD. He further asked BMU to prepare a nation-wide inspection plan according to availability of 12 trainee engineers , 4 survey vehicles with drivers. The plan will be discussed among GM RAMD, BMU and JICA Experts on Wednesday morning. • Mr. Simair has prepared the CSR and has received comments on CSR. After updating the CSR, GM RAMD will have a discussion over CSR with Member Planning. GM RAMD instructed BMU to provide JICA Experts with a dummy CSR by Monday evening. • GM RAMD instructed BMU to prepare a proposal of incorporating BMS portal on NHA website. • The Bridge Inspection and Repair Manuals were sent to various offices and universities for their comments. Monday 13th August ’18 is last day to submit comments. After that, the manuals will be forwarded to proceed for approval by higher authorities.

Minutes of Meeting

	• Chairman was not in office for one week and the request for Chairman's comments for approval is still pending. • Mr Igo proposed that BMU should hold a seminar for Regional Offices and MUs regarding Bridge Management System and related softwares. GM RAMD agreed to the idea.

(16) MM with GM (RAMD)_ 2018/8/15

Minutes of Meeting

Date	August 15,2018
Attendees	JICA Expert Team Yukio Igo/ Project Manager Akio Mori/ BMS Expert Momina Rauf /Local Administrator NHA Ikramus Saqlain Haider /GM (RAMD) Sohaib Mansoor /DD(BMU) Ghulam Murtaza Simair /DD(BMU) Asif Azam /DD (BMU)
Discussion	• The inventory survey in Lahore could not be continued because of unavailability of transport vehicles. Transportation will be arranged after approval from Member Planning. He is on leave currently. • The CSR is to be discussed with Member Planning also. Mr. Asif will provide Dummy CSR for BMS Software today. • BMU will prepare a working paper about long term proposal for running of BMS. The proposal will be made according to the resources (4 vehicles and 12 TEs). • The JICA Experts and BMU will check the comments received on Manuals and they will update the manuals accordingly, if needed. GM RAMD instructed BMU to prepare a working paper so that the manuals could be presented in executive board meeting of NHA. • GM RAMD agreed to Mr Igo's proposal of inviting Chairman (NHA) for a speech on seminar about BMS. • Mr. Asif had discussed about including BMS portal on NHA website with Mr. Sadaqat Ullah (AD S/W). AD S/W will be referred to GM RAMD for further discussion on BMS Portal.

(17) MM with GM (RAMD)_ 2018/10/12

Minutes of Meeting

Date	October 12, 2018
Attendees	JICA Expert Team Haruo Tomiyama/Capacity Development Expert Momina Rauf /Local Administrator NHA Ikramus Saqlain Haider /GM (RAMD) Sohaib Mansoor /DD(BMU) Ghulam Murtaza Simair /DD(BMU) Asif Azam /DD (BMU)
Discussion	• GM (RAMD) has instructed BMU (Mr. Simair) to put up working sheet for authorization of SOP and manuals. Mr. Simair will prepare working paper now for further procedure. • Mr. Asif will initiate a note for approval of date of JCC-6. The tentative date is December 3, 2018. • On Monday The 41 bridges and culverts will be ready to run on the software. The responsible person is Mr. Sohaib. • BMU demanded to handover final PDF files of all 3 manuals to them. • Mr. Asif will provide the number of bridges and culverts in RO & MU by 17th October. • For bridge/culvert inspection at Lahore, two cars have been approved by Member (Admin). • The request letter for quotation of server items has been processed now. MR. Asif will share a copy of request letter with JICA Experts on 15th October. • GM (RAMD) did not give any specific comment about hiring of 4 new trainee engineers. • BMU will mutually decide the contents of BMS Seminar.JICA Expert team is requested to propose the time duration for lectures in seminar and the speakers for every lecture.