

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH
MINISTRY OF LOCAL GOVERNMENT RURAL DEVELOPMENT AND COOPERATIVES
LOCAL GOVERNMENT ENGINEERING DEPARTMENT

Program for Supporting Rural Bridges (SupRB)

TERMS OF REFERENCE (TOR)

FOR

RuBIMS (Software) and Data Collection Monitoring Specialist
(National)
(Contract Package No. SD49-1)

December 2023

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Terms of Reference
for
RuBIMS (Software) and Data Collection Monitoring Specialist
(National)

1. Background and General Description

- 1.1 The Government of Bangladesh has received a loan from the World Bank (WB) towards the cost of the program titled "Program for Supporting Rural Bridges (SupRB)" (hereinafter referred as 'the project'). The project will be implemented by the Local Government Engineering Department (LGED) through the Project Director's Office (PMU) and contract administration of civil works will be carried out by LGED District/Upazila offices. The project has been designed to be implemented in total 61 districts of the country, except three hill districts at a cost of USD \$ 614 million. As per practical reasons the project has been restructured and the cost as per reconstruction is USD \$4.45 million.
- 1.2 The initial targets of the Project Components include have been (i) Major and minor maintenance of 85,000 meter of bridges; rehabilitation of 24,000 meter of bridges; Capacity Expansion (Widening) of 5000 meter of bridges; replacement or newly construction of 20,000 meter of bridges (on Upazila and Union roads only); As per restructuring the targets are (i) Major and minor maintenance of 90,500 meter of bridges; rehabilitation of 4,000 meter of bridges; Capacity Expansion (Widening) of 2,500 meter of bridges; replacement or newly construction of 18,936 meter of bridges (on Upazila and Union roads only); (ii) Technical, fiduciary, procurement, social and environmental capacity improvement of LGED including design and implementation of climate resilient bridges and establishment and operationalize of Grievance Redress System (GRS). This project is aimed at to provide uninterrupted connectivity between areas of agricultural production, growth centers and rural markets located in the project area and enhance earnings opportunities creating uninterrupted access to the commercial institution and basic services like health and education for the rural poor. The expected impact of the project will be to considerably reduce poverty in the intervention area.
- 1.3 The project is the first of its kind in this country calls for proper planning of Rural Bridge Maintenance and Management as well as promotional activities to be a successful one.
- 1.4 The Bridges are part of the road infrastructure and are important link in a road network. And they must be very well maintained for growth of Bangladesh economy and to maximize the benefits from the investments. Bridge inspection is one of the basic functions in the Bridge Asset Management System and play an important role in providing a safe transportation infrastructure for Rural Transportation network of Bangladesh. As the rural bridges continue to age and deteriorate, an accurate and thorough assessment the condition of each bridge is significant in maintaining a safe, functional and reliable transportation system.

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Bridge inspection is the most important step in the assessment process of the physical condition of a bridge in order to determine remedial measures such as maintenance (major/ minor)/rehabilitation/Capacity Expansion, New Construction or replacement.

1.5 The Project will support the LGED's strategy for sustainable development of Bridge Asset Management. The main strategic elements include construction of new bridge assets and preservation of existing Bridge assets comprehensively to enhance rural connectivity through maintenance interventions in different categories. The main target is to initiate a competitive selection method/procedure/system for maintenance interventions of rural bridge under budget constraints to ensure:

- An optimum balance between creation and preservation of assets;
- Replacement of rural bridges that surpassed their economic lives;
- Making unsafe bridges safer;
- Improving institutional capacity and core business processes;

The ultimate target is to include formulation of a digital automation system (Software) for Maintenance Management of Rural Bridges Namely, Rural Bridge Information Management System (RuBIMS). This will help LGED in information-based decision making on Rural Bridge asset in plan, design, construction and Maintenance management of bridges sustainably.

1.6 The Rural Bridge Information Management System (RuBIMS) has been developed under Second Rural Transport Improvement Project (RTIP2) with the financial Assistance of the World Bank. RuBIMS is a comprehensive system for storing and analyzing of all-inclusive data of rural bridges for aiding information based rural bridge maintenance management related decision making. It has a smartphone-based interface to facilitate inserting data/information of bridge collected during inspection in the field. Apart from facilitating data input of rural bridges, the system has also a web interface which is capable of managing, processing data/information of bridges/culverts, calculating Bridge Condition Index (BCI) (*a leading parameter/indicator to ascertain the level of defects of an element/member/structure*) as well as suggesting the type of maintenance intervention that a bridge/culvert will require. It will also be able to generate a priority list of bridges under different types of interventions. The system uses detailed algorithm in analyzing prioritization, calculating the BCI and types of interventions required.

1.7 RuBIMS is at the final stage of its operationalization. Meanwhile test data input has been performed in the field level where some observations from field operator's end has been resulted. Fine tuning and bug identification and fixing are ongoing. On the other hand, synchronization of the provisions, algorithms and interfaces as suggested in the Bridge Inspection and Condition Assessment Guideline with those of the RuBIMS is under process. The successful planning of maintenance programs

of LGED as well as the project is significantly dependent of the appropriate formulation and Operation of RuBIMS.

- 1.8 To successfully manage the overall implementation including of the Bridge Asset Management system, Operation & Maintenance activities of RuBIMS, a "RuBIMS (Software) and Data Collection Monitoring Specialist" will be deployed in individual category of consultants (National) within the revised scope of the Project.

2. Objectives of the Assignment

The leading objectives of the consultancy service will be (but not limited to):

- a) *Making RuBIMS fully functional through necessary Operation and Maintenance;*
- b) *Ensuring inspection and data collection of bridges throughout the project districts (including the Pilot Districts) and data entry using RuBIMS;*
- c) *Institutionalization of RuBIMS especially for Maintenance Management of Rural Bridges in LGED.*
- d) *Monitoring, coordination among Data collection and Data entry (including the Piloting) and RuBIMS O&M Firm and liaison with PMU and LGED other Projects and Units.*

3. Scope of the Assignment:

To attain the objectives of the assignment, the Tasks/Responsibilities of "RuBIMS (Software) and Data Collection Monitoring Specialist" shall include, but not limited to:

- a) **Making RuBIMS fully functional through necessary upgrade, Operation and Maintenance:**
 - i. *Work under direct supervision of Sr. Program Management Specialist and close coordination with Bridge Management Specialist (BMS);*
 - ii. *Ensure analyzing and identification of discrepancies/mismatches between the provisions/infaces/algorithms etc. of "Bridge Inspection and Condition Assessment Guidelines and those of the RuBIMS, and/or operational hindrances (if any) through the programmer of RuBIMS O&M Firm in close coordination with BMS;*
 - iii. *Ensure necessary inclusion/integration/upgradation/correction/addition /deletion etc. in RuBIMS as per analyses and identification through the programmer of RuBIMS O&M Firm in close coordination with BMS;*
 - iv. *Ensure test run of RuBIMS in the field to become sure about the level and extent of nonconformity/conformity with the Guideline through RuBIMS O&M Firm in close coordination with BMS;*
 - v. *Share the results of upgradation with concerned Officials of PMU/Consultants and the Project Director;*
 - vi. *Study and analyze the comments/problems encountered by the field level operators mandatorily and suggest for necessary bugging/maintenance to the concerned programmer/consultant of RuBIMS O&M Firm responsible for maintaining the software;*



- vii. *Ensure necessary bugging/maintenance of RuBIMS with the help of RuBIMS O&M Firm so as to ensure uninterrupted bridge inventory and condition data collection, inputting and operation of RuBIMS throughout the assignment;*
 - viii. *Ensure frequent test runs in the field to confirm the proper functionality of RuBIMS after any bugging/maintenance/finetuning with the help of RuBIMS O&M Firm;*
 - ix. *Oversee the activities of the RuBIMS O&M Firm/consultants and report to the Program Team Leader and the Project Director time to time;*
 - x. *Any other responsibilities assigned by the Project Director.*
- b) Ensuring inspection and data (inventory and condition) collection of bridges throughout the project districts (including the Pilot Districts) and data entry using RuBIMS;**
- i. *Study the Terms of References of the Consulting Firms deployed for Inspection, Data collection and Data entry (including the Piloting and RuBIMS O&M Firm) in Project Districts (alongwith Pilot Districts);*
 - ii. *Arrange for discussion meeting with the firms (deployed for Inspection, Data collection and Data entry including the Piloting One and RuBIMS O&M Firm) along with PMU Officials and consultants concerned to share the detailed procedure/systems of data collection and data entry using RuBIMS;*
 - iii. *Ensure collecting the list of bridges completed meanwhile under different projects including SupRB those are not included in the list of "Road Structure Data Management System (RSDMS)" of LGED through the consulting Firms deployed for Inspection, Data collection and Data entry (including the Piloting Firm and RuBIMS O&M Firm);*
 - iv. *Ensure devising a realistic plan for data collection of Bridges and entry in project districts (including the Pilot ones) through the consulting firms deployed for Inspection, Data collection and Data entry (including the Piloting Firm);*
 - v. *Ensure arrangement for orientation sessions (both theoretical and practical) for the personnel/staff related to inspection, data collection and entry using RuBIMS through RuBIMS O&M Firm;*
 - vi. *Maintain close liaison with the Team Leaders and personnel of consulting Firms deployed for Inspection, Data collection and Data entry (including the Piloting) and RuBIMS O&M Firm to successfully manage the whole assignment;*
 - vii. *Communicate with the related personnel/expert and ensure identification of the root cause(s) of problems (if any) related to Operation of RuBIMS during data Entry and arrange for prompt/proactive troubleshooting/maintenance of the software through the Programmer of RuBIMS O&M Firm;*
 - viii. *Review data quality control and acceptance procedure of the Consulting Services for bridge data collection and propose necessary revisions to strengthen the data quality control.*
 - ix. *Assess the quality of submitted bridge inspection/inventory data based on the acceptance procedure and approve each submission package.*

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- x. *Arrange for collecting feedbacks through online/offline platform from the field;*
- xi. *Maintain close liaison with the Maintenance Unit (especially Superintending Engineer, Maintenance);*
- xii. *Any other responsibilities assigned by the Project Director.*

c) Institutionalization of RuBIMS especially for Maintenance Management of Rural Bridges in LGED:

- i. *Collect and study all the available documents related to RuBIMS formulation, Inspection, Data Collection, Data entry, Operation & Maintenance of RuBIMS, Analyzing and processing entered data through RuBIMS;*
- ii. *Prepare a summary of the contents that may be helpful in the future use, upgradation of RuBIMS in close coordination with BMS;*
- iii. *Ensure the preparation of an easy and user-friendly User's Manual of RuBIMS with illustrations and provisions for future upgradations by the concerned experts of RuBIMS O&M Firm;*
- iv. *Ensure preparation of training modules/materials based on the piloting experience, including multimedia training files such as screen recordings with narration for RuBIMS software operation for both Web and Mobile as well as field inspection and inventory guides;*
- v. *Share the Manual and Training Materials/Modules with Concerned Officials/ Experts of PMU/Training Unit/Maintenance Unit/Field Offices etc.*
- vi. *Ensure approval of the Project Director and finalize the Manual and Training Modules/Materials incorporating the suggestions/recommendations (if any);*
- vii. *Ensure preparation of a training plan by the RuBIMS O&M Firm discussing with the Training Unit of LGED in association with BMS with a provision of On-the-Job training so as to facilitate the implementation of RuBIMS operation and the training simultaneously;*
- viii. *Assist in implementing the Training Programs as per plan in association with the Training Unit of LGED;*
- ix. *Perform as lead trainer in the training programs related to RuBIMS Operation;*
- x. *Arrange for orientation course for the Officials related to decision making regarding maintenance management (both in the Head Quarters and Field Level) of rural Bridges of LGED to enhance their capacity in using RuBIMS institutionally;*
- xi. *Any other responsibilities assigned by the Project Director*

d) Monitoring, coordination among Data collection and Data entry (including the Piloting) and RuBIMS O&M Firm and liaison with PMU and LGED other Projects and Units

- i. Ensure required coordination with all the activities of the consulting Firms deployed for Inspection, Data collection and Data entry (including the Piloting) and RuBIMS O&M Firm.
- ii. Monitor all of the activities of data collection Forms and RuBIMS O&M Firm and report including recommendation on their overall performance to the Project Director.

4. Duration of the Assignment

It is expected that the Consultants will be possible to be deployed in February, 2024 and contract period will be up to June 2025 i.e., 17(seventeen) Months from the date of Contract.

5. Required Qualification and Experience:

Educational Qualifications:

- B. Sc in Civil Engineering Degree from a reputed University/Institution is a mandatory requirement.
- Master's Degree in Civil Engineering or Computer Engineering or Information Technology will be given preference.
- A combination of B. Sc in Civil Engineering Degree along with with a diploma or formal education/professional training on IT may be considered as well.

Experience:

- Minimum of 15 (Fifteen) years of general working experience out of which 10 (Ten) years of experience on Bridge Design/Construction/Supervision/Bridge related data collection under projects financed by GOB/Development partners;
- Working experience on managing, monitoring and supervision of large and diversified team is essential;
- Working experience in leading/monitoring/working with a team involved in developing software solution of Civil Engineering/Highway Engineering/Asset Management will be considered an asset.

Additional Skills:

- Working knowledge in Programming languages is preferable;
- Excellent writing skills, as well as strong analytical aptitude, communication and presentation skills is required;
- Ability to analyze and identify requirements, related to design, development and implementation of software application.

6. Institutional Arrangements

The individual Consultant will work directly with the Project director of the "Program for Supporting the Rural Bridges" and support the officials and staff of LGED at LGED district in the



program area, and at PMU LGED Headquarters, in order to achieve the objectives of the program. The SupRB will provide office accommodation, computer/laptop, printer and other support. All payment for necessary requirements may be made from consultant monthly payment as reimbursable expenses; Transportation cost is included as reimbursable expenses and the consultant will be paid per bill submitted by the consultant; The travel cost will as at cost as inscribed as travelling allowance.

7. Reporting Requirements

The consultant will submit the following reports:

- **Inception Report:** Inception Report within 30 days of mobilization;
- **Monthly Reports:** Timesheet summarizing the day wise accomplishment of the month;
- **Half-Yearly Reports:** Summarizing briefly the accomplishment over the previous six months including details progress, capacity building and training, and consultant's activities, any issues and resolution of these, and a work plan for the following six months;
- **Annual Reports:** Annual reports covering all details of the half-yearly reports summarizing all activities to date, any issues and methods for resolution of these, and planning to achieve future targets;
- **Draft Task Completion Report:** The consultant will submit the Draft Task Completion Report after completion of services but within two months of contract end.
- **Final Task Completion Report:** After approval of the Draft Task Completion Report, the consultant will submit Final Task Completion Report at the end of contract period.

8. Selection Method

Selection of the RuBIMS (Software) and Data Collection Monitoring Specialist will follow the procedures for selecting Individual Consultants described in the "The World Bank Procurement Regulations for IPF Borrowers, Procurement in Investment Project Financing Goods, Works, Non-Consulting and Consulting Services, July 2016 revised in November 2020."

